Multi-Jurisdictional Hazard Mitigation Plan

City of Carlsbad Annex

San Diego County, California

2023

City of Carlsbad

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1. SECTION ONE: Determine the Planning Area and Resources

1.1. Planning Area: City of Carlsbad

The City of Carlsbad is a coastal community in northern San Diego County, California located 87 miles south of Los Angeles and 35 miles north of San Diego, surrounded by mountains, lagoons, and the Pacific Ocean. The City shares legal boundaries with the Cities of Oceanside to the north, Vista and San Marcos to the east, and Encinitas to the south. Referred to as "The Village by the Sea" by locals, Carlsbad is a prime tourist destination hosting LEGOLAND California, regional shopping centers, specialty retail outlet stores, expansive variety of dining experiences, top rated golf courses and world class resort properties. The city covers 42 square miles with an estimated 2020 population of 118,313.

Carlsbad has a semi-arid Mediterranean climate and averages 263 sunny days per year. Winters are mild with periodic rain. Frost is rare along the coast, but sometimes occurs in inland valleys in December and January. Summer is almost rain free, but sometimes overcast and cool with fog off the Pacific. While most days have mild and pleasant temperatures, hot dry Santa Ana winds bring high temperatures on a few days each year, mostly but not exclusively in the fall.

As of the 2010 United States Census, the racial makeup of Carlsbad was 82.8% White, 1.3% African American, 0.5% Native American, 7.1% Asian, 0.2% Pacific Islander, 4.0% from other races, and 4.2% from 2 or more races. Hispanic or Latino of any race were 13.3%.

Out of 39,964 households in 2011, there were 67.5% families, of which 30.9% had children under the age of 18 living in them and 54.3% were married-couple families. There were 32.5% nonfamily households, of which 25.5% were made up of a householder living alone and 8.3% were a householder living alone who was 65 years or over. The average household size was 2.55 and the average family size was 3.10. Of the population 25 years and over, 95.7% graduated from high school and 51.3% held a bachelor's degree or higher. 65.2% of the population 16 years and over was in the labor force. As of the 2020 San Diego County Point in Time census, Carlsbad's homeless population was 147 individuals.

A full-service city, Carlsbad has its own police and fire services, a water district, parks and recreation, and library and cultural arts departments, in addition to standard administrative and public works functions. Known for its financial stability, the city maintains an AAA credit rating and has a general fund reserve balance exceeding $61 million. Additionally, Carlsbad has drafted ordinances protecting sensitive wildlife habitat, becoming one of the first municipalities in California to do so, pledging to protect about 40 percent of the city as permanent open space.

Carlsbad is the home of the second largest county regional airport, McClellan-Palomar Airport, with about 145,862 flights per year. Carlsbad's core industries include information technology, video game development, manufacturing, robotics, medical devices, life science, wireless technology, clean technology, action sports, tourism, design development, and real estate.

1.2. Community Rating System Requirements

The Community Rating System (CRS) is a FEMA program and rewards communities that go beyond the minimum standards for floodplain management under the National Flood Insurance Program (NFIP).

Communities can potentially improve their Community Rating System and lower NFIP premiums by developing a CRS Plan.

For more information on the National Flood Insurance Program, see http://www.fema.gov/national- flood-insurance-program.

Community Rating System (CRS) Planning Steps	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1. Organize	**Task 1:** Determine the Planning Area and Resources **Task 2:** Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	**Task 3:** Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	**Task 4:** Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	**Task 5:** Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 5. Assess the problem	
Step 6. Set goals	**Task 6:** Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i) 44 CFR 201.6(c)(3)(ii) 44 CFR 201.6(c)(3)(iii)
Step 7. Review possible activities	
Step 8. Draft an action plan	
Step 9. Adopt the plan	**Task 8:** Review and Adopt the Plan 44 CFR 201.6(c)(5)
Step 10. Implement, evaluate, revise	**Task 7:** Keep the Plan Current **Task 9:** Create a Safe and Resilient Community 44 CFR 201.6(c)(4)

TABLE 1: FEMA LOCAL MITIGATION PLANNING HANDBOOK 1.1 DESCRIBES THE CRS REQUIREMENTS MET BY THE COUNTY OF SAN DIEGO MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.

Any jurisdiction or special district may participate in the hazard mitigation planning process. However, to request FEMA approval, each of the local jurisdictions must meet all requirements of 44 CFR §201.6. In addition to the requirement for participation in the process, the Federal regulation specifies the following requirements for multi-jurisdictional plans:

- The risk assessment must assess each jurisdiction's risk where they may vary from the risks **facing the entire planning area. (44 CFR §201.6(c)(2)(iii))**

- There must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. (44 CFR §201.6(c)(3)(iv))

- Each jurisdiction requesting approval of the plan must document that is has been formally adopted. (44 CFR §201.6(c)(5))

The hazard mitigation plan must clearly list the jurisdictions that participated in the plan and are seeking plan approval. The San Diego County Multi-Jurisdictional Hazard Mitigation Plan and annexes meet all requirements.

2. SECTION TWO: Build the Planning Team

2.1. Planning Participants

The City of Carlsbad local planning group (LPG) for emergency planning is composed of members from the Carlsbad Emergency Management Administrative Team (CEMAT). The LPG identified current capabilities available for implementing hazard mitigation activities. Representatives of numerous City departments involved in hazard mitigation planning included:

Administrative Services – Finance:
Roxanne Muhlmeister, Assistant Finance Director
Shea Sainz, Senior Contract Administrator
Rosario Aranda, Associate Contract Administrator

Administrative Services – Human Resources:
Judy von Kalinowski, Human Resources Director
Darrin Schwabe, Human Resources Manager

Administrative Services – Information Technology:
Doug Kappel, Information Technology Manager
Javier Ruiz, Information Technology Manager

Administrative Services – Innovation & Economic Development:
David Graham, Chief Innovation Officer

Communications & Engagement:
Karen Whitehead, Media & Graphics Supervisor
Nikki Matosian, Community Relation Manager
Sarah Lemons, Community Relation Manager
Tom Mallory, Communications Coordinator

Community Services – Office of the City Clerk:
Faviola Medina, City Clerk Services Manager
Tammy Cloud-McMinn, Senior Deputy City Clerk
Hector Gomez, Senior Deputy City Clerk

Community Services – Community Development:
Kerry Jezisek, Senior Program Manager

Community Services – Library & Cultural Arts:
Debbie Jo McCool, Associate Analysist
Fiona Everett, Senior Management Analysist

Community Services – Parks & Recreation:
Lori Swenck, Recreation Area Manager
Mike Pacheco, Recreation Services Manager

Fire Department:
Michael Calderwood, Fire Chief
Nick Ordille, Assistant Fire Chief
Randy Metz, Fire Marshall
David Harrison, Assistant Director of Emergency Services
Marie Jones-Kirk, Program Manager
Don Rawson, Emergency Services Coordinator

Police Department:
Jason Jackowski, Lieutenant

Public Works – Environmental Management:
Tim Murphy, Senior Program Manager
James Wood, Environmental Manager
Mike Grim, Senior Program Manager

Public Works – Fleet & Facilities:
Charles Balteria, Program Manager

Public Works – Transportation:
Michael O'Brian, Public Works Superintendent
Jonathon Schauble, Senior Engineer
Stephen Stewart, Municipal Projects Manager

Public Works – Utilities:
Don Wasko, Utilities Manager
Andrew Wilson, Utilities Supervisor

Public Works – Construction Management & Inspection:
Emily Hasegawa, Municipal Projects Manager

2.2 Planning Process

This version of the city's Hazard Mitigation Plan was revised to reflect changes in development, progress in local mitigation efforts, and changes in priorities. Generally, hazard priorities remained unchanged, though some hazards (such as Climate Change) prevalence and/or probability of occurrence increased and, therefore, needed an updated Vulnerability Assessment. All Hazard Profiles were researched for current content, data, and details.

The goals and objectives in this plan were informed by the risk assessment findings, the localized hazard identification and loss/exposure estimates, and the City's capabilities assessment. These preliminary goals, objectives, and actions represent a vision of long-term hazard reduction and/or capabilities enhancement. To help further the development of the goals and objectives, the LPG compiled and reviewed current jurisdictional sources including the City's planning documents, codes, and ordinances. The plan goals, objectives, and actions were updated to reflect current priorities within existing plans such as the jurisdiction's General Plan's Safety and Housing elements.

The 2020 COVID-19 Pandemic had some impact on the overall progress on the 2018 plan and action items, but the pandemic did not negatively impact the community's vulnerability. The plan was created in tandem with existing local plans and procedures and thus supported the city's pandemic response, which helped minimize the impact to the city and its assets.

2021 LPG Schedule of Meetings

January 5, 2021	February 2, 2021	March 2, 2021	April 6, 2021
May 4, 2021	June 1, 2021	July 6, 2021	August 3, 2021
September 7, 2021	October 5, 2021	November 2, 2021	December 7, 2021

2022 LPG Schedule of Meetings

January 4, 2022	February 1, 2022	March 1, 2022	April 5, 2022

See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan's* Section Two for details about the county-wide Planning Process.

3. SECTION THREE: Create an Outreach Strategy

See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan's* Section Three for details about the county-wide outreach strategy.

4. SECTION FOUR: Review Community Capabilities

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities and must be included in a hazard mitigation plan by the planning team.

The planning team also may identify additional types of capabilities relevant to mitigation planning.

4.1. Capability Assessment

The primary types of capabilities for reducing long-term vulnerability through mitigation planning are:

- Planning and Regulatory
- Administrative and Technical
- Financial
- Education and Outreach

Based on the capability assessment, the City of Carlsbad has existing regulatory, administrative/technical, and fiscal mechanisms in place to mitigate hazards. In addition to these existing capabilities, there are opportunities to enhance and/or refine these policies and programs to further protect the community.

Some examples of potential opportunities are organized below by regulatory, administrative/technical, fiscal, and outreach opportunities.

4.1.1. Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction has in place:

Plans	Yes/No Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2015	Yes
Capital Improvements Plan	Yes 2020	Yes
Economic Development Plan	Yes 2020	Yes
Local Emergency Operations Plan	Yes 2021	Yes
Continuity of Operations Plan	Yes 2021	Yes
Transportation Plan	Yes 2020	Yes
Stormwater Management Plan	Yes 2016	Yes
Community Wildfire Protection Plan	Yes 2013	Yes
M. Real estate disclosure requirements	Yes 2020	Yes
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	Y 2019 Y 2021 Y 2020	Coastal Zone Land Use Plan Disaster Recovery Plan Climate Action Plan

Building Code, Permitting, and Inspections	Yes/No	Are codes adequately enforced?
Building Code	Yes	Version/Year: 2019 Triennial Edition of Title 24
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire department ISO rating	Yes	Rating: 3
Site plan review requirements	Yes	Yes
Land Use Planning and Ordinances	**Yes/No**	**Is the ordinance an effective measure for reducing hazard impacts?** **Is the ordinance adequately administered and enforced?**
Zoning ordinance	Yes	Yes
Subdivision ordinance	Yes	Yes
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Yes	Yes
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	Yes	Yes
Flood insurance rate maps	Yes	Yes
Acquisition of land for open space and public recreation uses	Yes	Yes
Other	N/A	
How can these capabilities be expanded and improved to reduce risk?		
Future opportunities for regulatory enhancement may focus on compliance with state legislation, including amending the City's General Plan Public Safety Element to reference the 2023-2028 San Diego County MJHMP and Carlsbad Annex. Additionally, Carlsbad will continue to implement mitigation policies and programs to include regulatory requirements for flooding and coastal hazards; geology and seismicity; airport and railroad hazards; and soils and materials hazards.		

TABLE 2: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA.

4.1.2. Administrative and Technical

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. For smaller jurisdictions without local staff resources, if there are public resources at the next higher-level government that can provide technical assistance, indicate so in your comments:

Administration	Yes/No	Describe capability Is coordination effective?
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Manage general, community and urban plans; manage land use and land development projects; review and write environmental documents; prepare and coordinate processing of local, state, and federal permits; review and analyze technical drawings, specifications, and reports; perform site inspections and field research; research, review and prepare ordinances and policies; review projects and advise citizens and developers during application process to ensure compliance with City regulations; prepare planning reports, use GIS products/maps; perform quality control, coordinate various departments and agencies, monitor mitigation requirements for environmentally sensitive projects and perform proper documentation and reporting.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Conduct inspections of private and public construction projects inspecting materials and workmanship to ensure compliance with approved plans and specifications. inspect conditions prior to the start of construction, during construction and upon completion.
Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Yes	Carlsbad Planners and Engineers understand the importance of mitigation measures in their respective area of expertise as it relates to hazards risks.
Mitigation Planning Committee	Yes	Carlsbad utilizes its Carlsbad Emergency Management Administrative Team (CEMAT) for planning mitigation.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Yes	Perform a variety of semi-skilled and skilled work in pruning, trimming, felling, and topping trees; to operate and maintain tree trimming equipment; and to do related work such as clearing draining systems.
Mutual aid agreements	Yes	Carlsbad has several mutual aid agreements in place related to mitigation planning.

Staff	Yes/No FT/PT [1]	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	Yes FT-1	Yes
Floodplain Administrator	Yes FT-1	Yes
Emergency Manager	Yes FT-2 PT-1	Yes
Surveyors	No	
Staff with education or expertise to assess the community's vulnerability to hazards	Yes FT-2 PT-1	Yes
Community Planner	Yes FT-5	Yes
Scientists familiar with the hazards of the community	No	
Civil Engineer	Yes FT-4	Yes
Personnel skilled in GIS and/or HAZUS	Yes FT-5	Yes
Grant writers	Yes PT-3*	*Part of other duties as assigned to full-time positions
Other	N/A	

Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Warning systems/services (Reverse 911, outdoor warning signals)	Yes	AlertSanDiego for Reverse 911 operations, Wireless Emergency Alerts (WEA) for emergency notifications, Changeable Message Boards All have been used to mitigate risks from hazards in the past
Hazard data and information	Yes	Previous Regional and Carlsbad-specific hazard data and information has been used to identify and mitigate risks in the past
Grant writing	Yes PT-3*	*Part of other duties as assigned to full-time positions
Hazus analysis	Yes	FEMA Hazus Program has been used to identify and mitigate risks in the past
Other	N/A	

How can these capabilities be expanded and improved to reduce risk?
Other future enhancements may include providing hazard training for staff or hazard mitigation grant funding in partnership with the County of San Diego and Cal OES. City staff are aware of the benefits of participating in training and webinars offered by Cal OES Hazard Mitigation Assistance (HMA) Team related to HMGP opportunities, HMGP Sub application Development support, and other funding programs, such as Prepare California Jumpstart. Other opportunities may be related to coordinating and educating key stakeholders in the city. Other stakeholders may be interested in aligning efforts related to hazard mitigation and supporting HMGP Sub applications and other hazard mitigation trainings.

TABLE 3: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.1.3. Education and Outreach

Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information:

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc.	Yes	Carlsbad partners with several citizen groups and non-government organizations related to coastal zone resources, sensitive habitat management protection, community emergency response, and access and functional needs coordination, all of which help implement mitigation activities
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	Carlsbad has several community educational programs in almost all its departments, as well as a specific Communication & Engagement Department
Natural disaster or safety related school programs	Yes	Both the Police and Fire Departments offer disaster and safety programs to local schools
StormReady certification	No	
Firewise Communities certification	No	
Public-private partnership initiatives addressing disaster-related issues	Yes	Ready Carlsbad Business Alliance
Other	N/A	

How can these capabilities be expanded and improved to reduce risk?

The city may also expand outreach capabilities related to the implementation of the 2023-2028 County of San Diego MJHMP and the City's Annex. Specific enhancements may include continued public involvement through social media posts, community education, and advertisements focused on hazard mitigation projects successes mitigation as well as focused outreach to under-represented and special-interest groups. The city may also develop outreach kits for partner organizations.

The city will continue its Hazard Reduction Program, which takes a proactive approach to mitigate hazards within the City of Carlsbad by inspecting privately owned open space lands ensuring city guidelines are appropriately maintained within these areas.

Property owners on vacant parcels in the Hazard Reduction Program receive an annual "Notice to Destroy Weeds & Remove Rubbish," and they are expected to maintain their property free of fire hazards or nuisance vegetation year-round.

TABLE 4: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

4.2. Safe Growth Audit

Identify gaps in your community's growth guidance instruments and improvements that could be made to reduce vulnerability to future development:

Comprehensive Plan	Yes	No
Land Use		
1. Does the future land-use map clearly identify natural hazard areas?	X	
2. Do the land-use policies discourage development or redevelopment within natural hazard areas?	X	
3. Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	X	
Transportation		
1. Does the transportation plan limit access to hazard areas?	X	
2. Is transportation policy used to guide growth to safe locations?	X	
3. Are movement systems designed to function under disaster conditions (e.g., evacuation)?	X	
Environmental Management		
1. Are environmental systems that protect development from hazards identified and mapped?	X	
2. Do environmental policies maintain and restore protective ecosystems?	X	
3. Do environmental policies provide incentives to development that is located outside protective ecosystems?	X	
Public Safety		
1. Are the goals and policies of the comprehensive plan related to those of the FEMA Local Hazard Mitigation Plan?	X	
2. Is safety explicitly included in the plan's growth and development policies?	X	
3. Does the monitoring and implementation section of the plan cover safe growth objectives?	X	

TABLE 5: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA CONTINUED.

Zoning Ordinance	Yes	No
1. Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?	X	
2. Does the ordinance contain natural hazard overlay zones that set conditions for land use within such zones?	X	
3. Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?	X	
4. Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains?	X	
Subdivision Regulations	**Yes**	**No**
1. Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?	X	
2. Do the regulations provide for conservation subdivisions or cluster subdivisions to conserve environmental resources?	X	
3. Do the regulations allow density transfers where hazard areas exist?		X
Capital Improvement Program and Infrastructure Policies	**Yes**	**No**
1. Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?		X
2. Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?	X	
3. Does the capital improvement program provide funding for hazard mitigation projects identified in the FEMA Mitigation Plan?		X
Other	**Yes**	**No**
1. Do small area or corridor plans recognize the need to avoid or mitigation natural hazards?	X	
2. Does the building code contain provisions to strengthen or elevate construction to withstand hazard forces?	X	
3. Do economic development or redevelopment strategies include provisions for mitigation natural hazards?	X	
4. Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards?	X	

TABLE 6: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.2 DATA CONTINUED.

Questions were adapted from Godschalk, David R. Practice Safe Growth Audits, Zoning Practice, Issue Number 10, October 2009, American Planning Association.

4.3. National Flood Insurance Program (NFIP)

As a participant in the National Flood Insurance Program (NFIP), a community develops capabilities for conducting flood mitigation activities. The hazard mitigation plan must describe each jurisdiction's participation in the NFIP. Participating communities must describe their continued compliance with NFIP requirements. The mitigation plan must do more than state that the community will continue to comply with the NFIP. Each jurisdiction must describe their floodplain management program and address how they will continue to comply with the NFIP requirements. The local floodplain administrator is often the primary source for this information.

Jurisdictions where FEMA has issued a floodplain map but are currently not participating in the NFIP may meet this requirement by describing the reasons why the community does not participate. Plan updates must meet the same requirements and document any change in floodplain management programs.

The City of Carlsbad is a participant in the NFIP and has been a participant since June 14, 1977

NFIP Topic	Source of Information	Comments
Insurance Summary		
How many NFIP policies are in the community? What is the total premium and coverage?	State NFIP Coordinator or FEMA NFIP Specialist	284 Policies $152,501.00 Premiums $76,394,500 Coverage
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	FEMA NFIP or Insurance Specialist	11 Paid Claims $149,376.74 Total Paid Unknown
How many structures are exposed to flood risk within the community?	Community Floodplain Administrator (FPA)	
Describe any areas of flood risk with limited NFIP policy coverage	Community FPA and FEMA Insurance Specialist	
Staff Resources		
Is the Community FPA or NFIP Coordinator certified?	Community FPA	No
Is floodplain management an auxiliary function?	Community FPA	Yes
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Community FPA	Permit Review LOMC processing General information services GIS mapping
What are the barriers to running an effective NFIP program in the community, if any?	Community FPA	Staff resources
Compliance History		
Is the community in good standing with the NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records	Yes
Are there any outstanding compliance issues (i.e., current violations)?		No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?		2012
Is a CAV or CAC scheduled or needed?		No

TABLE 7: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.3 DATA.

NFIP Topic	Source of Information	Comments
Regulation		
When did the community enter the NFIP?	Community Status Book http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book	June 14, 1977
Are the FIRMs digital or paper?	Community FPA	Both
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Community FPA	Flood plain regulations currently meet FEMA and California State minimum requirements
Provide an explanation of the permitting process.	Community FPA, State, FEMA NFIP Flood Insurance Manual http://www.fema.gov/flood-insurance-manual Community FPA, FEMA CRS Coordinator, ISO representative CRS manual http://www.fema.gov/library/viewRecord.do?id=2434	All projects shall comply with cities flood plain management regulations. Required findings for approval of projects include that the site is safe from flooding, does not cause or create hazards to adjacent properties, does not have adverse impact upstream or downstream and cumulative effect of projects does not increase water surface elevation. Typically, special permits are required for proposed construction within potential flood areas.
Community Rating System (CRS)		
Does the community participate in CRS?	Community FPA, State, FEMA NFIP	No
What is the community's CRS Class Ranking?	Flood Insurance Manual http://www.fema.gov/flood-insurance-manual	N/A
What categories and activities provide CRS points and how can the class be improved?	N/A	N/A
Does the plan include CRS planning requirements	Community FPA, FEMA CRS Coordinator, ISO representative CRS manual http://www.fema.gov/library/viewRecord.do?id=2434	N/A

TABLE 8: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.3 DATA CONTINUED.

5. SECTION FIVE: Conduct a Risk Assessment

The planning team conducts a risk assessment to determine the potential impacts of hazards to the people, economy, and built and natural environments of the community. The risk assessment provides the foundation for the rest of the mitigation planning process, which is focused on identifying and prioritizing actions to reduce risk to hazards.

In addition to informing the mitigation strategy, the risk assessment also can be used to establish emergency preparedness and response priorities, for land use and comprehensive planning, and for decision making by elected officials, city and county departments, businesses, and organizations in the community.

5.1. Hazards Summary

The City of Carlsbad has identified one high ranking hazard within its service area: Wildfire. Additionally, the plan will address additional hazards, which could adversely impact system resiliency and disrupt continuity of operations within the city's service area, including Earthquake, Climate Change, and Flooding.

Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Avalanche	Negligible	Weak	Unlikely	Low
Climate Change (Drought, Erosion, Extreme Cold, Extreme Heat, Sea Level Rise, Severe Winter Weather, Storm Surge)	Significant	Moderate	Likely	Medium
Dam Failure	Negligible	Moderate	Unlikely	Low
Earthquake	Significant	Severe	Likely	Medium
Expansive Soils	Negligible	Weak	Unlikely	Low
Flood	Limited	Moderate	Likely	Medium
Hail	Negligible	Weak	Unlikely	Low
Hurricane	Negligible	Moderate	Unlikely	Low
Landslide	Limited	Moderate	Occasional	Low
Lightning	Limited	Moderate	Occasional	Low
Severe Wind	Significant	Moderate	Likely	Medium
Subsidence	Negligible	Weak	Unlikely	Low
Tornado	Negligible	Moderate	Occasional	Low
Tsunami	Limited	Moderate	Occasional	Medium
Wildfire	Extensive	Severe	Highly Likely	High

TABLE 9: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 5.1 DATA.

Definitions for Classifications Location (Geographic Area Affected)

- **Negligible:** Less than 10 percent of planning area or isolated single-point occurrences
- **Limited:** 10 to 25 percent of the planning area or limited single-point occurrences
- **Significant:** 25 to 75 percent of planning area or frequent single-point occurrences
- **Extensive:** 75 to 100 percent of planning area or consistent single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

- **Weak:** Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage
- **Moderate:** Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days
- **Severe:** Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months
- **Extreme:** Extreme classification on scientific scale, immediate onset, or extended duration of event, resulting in catastrophic damage and uninhabitable conditions

Hazard	Scale / Index	Weak	Moderate	Severe	Extreme
Drought	Palmer Drought Severity Index3	-1.99 to +1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 and below
Earthquake	Modified Mercalli Scale4	I to IV	V to VII	VII	IX to XII
	Richter Magnitude5	2, 3	4, 5	6	7, 8
Hurricane Wind	Saffir-Simpson Hurricane Wind Scale6	1	2	3	4, 5
Tornado	Fujita Tornado Damage Scale7	F0	F1, F2	F3	F4, F5

Probability of Future Events

- **Unlikely:** Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
- **Occasional:** 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- **Highly Likely:** 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

Overall Significance

- **Low:** Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
- **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

- *Cumulative meteorological drought and wet conditions: http://ncdc.noaa.gov/*
- *Earthquake intensity and effect on population and structures: http://earthquake.usgs.gov*
- *Earthquake magnitude as a logarithmic scale, measured by a seismograph: http://earthquake.usgs.gov*
- *Hurricane rating based on sustained wind speed: http://nhc.noaa.gov*
- *Tornado rating based on wind speed and associated damage: http://spc.noaa.gov*

Critical Facility Type	Jurisdiction Name	Counts
Airport – Control Tower	Carlsbad	1
Airport - Runway	Carlsbad	2
Airport – Terminal - Small	Carlsbad	1
Emergency - EOC	Carlsbad	2
Emergency - FIRE	Carlsbad	7
Emergency - POLICE	Carlsbad	1
Water - Waste	Carlsbad	4

5.1.1 Hazards

Hazard Profile Descriptions

The city's Local Planning Group reviewed the hazards identified in the previous Hazard Mitigation Plan and evaluated each to see if they still posed a risk to the jurisdiction. In addition, the hazards listed in the FEMA Local Mitigation Planning Handbook were also reviewed to determine if they should be added to the list of hazards to include in the plan revision.

The list of priority hazards was determined by the Local Hazard Mitigation Planning Team using jurisdictional-level hazard maps and data, historical records, vulnerability assessments, and input from subject matter experts.

Based on this FEMA Standardized evaluation, in accordance with information covered within the HAZUS Data Evaluations, Vulnerability Assessments, Hazard Seminar Series, and input from Subject Matter Experts and the public, the City of Carlsbad has prioritized the following hazards into High, Medium, and Low rankings (in no order of prioritization within individual categories):

High

- Wildfire

Medium

- Climate Change (Drought, Erosion, Extreme Heat, Sea Level Rise, Severe Winter Weather, Storm Surge)
- Earthquake
- Flood
- Landslide
- Severe Wind
- Tsunami

Low

- Avalanche
- Dam Failure
- Expansive Soils
- Hail
- Hurricane
- Lightning
- Subsidence
- Tornado

The final list of prioritized hazards for the City of Carlsbad were hazards with a High or Medium Overall Significance Rating which have the most impact to the planning area:

1. **Wildfire:** Carlsbad is susceptible to vegetation fires year-round. The proximity of vegetation (Wildland-Urban Interface) and climate contribute to this hazard. This threat is concentrated in Carlsbad's eastern sectors and canyon areas.

   Carlsbad experienced significant wildland fires in 1996 and 2014 and was threatened by the Firestorms of 2003 and 2007. Wildland fires typically originate east of Carlsbad and are driven west by Santa Ana (strong easterly) winds. Exceptions to this can occur as was the case during the 2014 Poinsettia Fire.

   Wind driven fires can occur at any time of the year but are most likely, and most severe, during Santa Ana conditions. Wildland fires may either occur with advanced warnings or may be short notice events.

   Carlsbad has identified wildfire as a high potential hazard-related exposure/loss event to its jurisdiction.

   ### Hazard Profile and Problem Description

   A wildfire is an uncontrolled fire spreading through vegetation and exposing or possibly consuming structures and threatening lives. When wind-driven, they spread quickly. They can be naturally occurring, man-made or the result of technology failures. They are fueled by grasses, brush, trees and other structures. A Wildland Urban Interface (WUI) fire (often called Wildland, Vegetation, or Brush fires) are wildfires in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

   Significant development in Carlsbad, and throughout San Diego County, is located along canyon ridges at the Wildland/Urban Interface. Areas that have experienced prolonged droughts or are excessively dry are at risk of wildfires. The risk can become severe or worse during high wind conditions. When these conditions present the National Weather Service issues a Red Flag Warning.

   People start most wildfires, usually the result of as debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires. Wildfire behavior is based on three primary factors: fuel, topography, and weather. The type, and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components is also a determinant of wildfire potential and behavior.

   Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity, and wind (both short and long term) affect the severity and duration of wildfires.

   San Diego County's topography consists of semi-arid coastal plain and rolling highlands, which, when fueled by shrub overgrowth, occasional Santa Ana winds and high temperatures, creates an ever-present threat of wildland fire. Extreme weather conditions such as high temperature, low humidity, and/or winds of extraordinary force may cause an ordinary fire to expand into one of massive proportions. Under current climate conditions, the wildfire threat to property, lives, and ecosystems in the San Diego region is very high. With hotter temperatures and possibly fewer rainy days in the coming decades, vegetation could become drier.

As a result, it is likely that San Diego region will see an increase in the frequency and intensity of fires, and the fire season could become longer and less predictable, making firefighting efforts more costly. Many consider the fire "season" now to be year-round, temporarily mitigated in the weeks following heavy winter rains.

An increase in wildfire also affects public health. Fire-related injuries and death are likely to increase as wildfires occur more frequently. Wildfires can also be a significant contributor to air pollution. Wildfire smoke contains numerous toxic and hazardous pollutants that are dangerous to health and can worsen lung disease and other respiratory conditions.

Regionally, wildland fires prompted five Proclaimed States of Emergency, and Urban/Intermix Fires prompted four Proclaimed States of Emergency in the County of San Diego between 1950-2014. In October of 2003, the second-worse wild-land fire in the history of San Diego County destroyed 332,766 acres of land, 3,239 structures, and 17 deaths at a cost of $450M. San Diego County's worst wildfire occurred in October 2007. At the height of the firestorm there were seven fires burning within the County. The fires destroyed 369,000 acres (13% of the County), 2,670 structures, 239 vehicles, and two commercial properties.

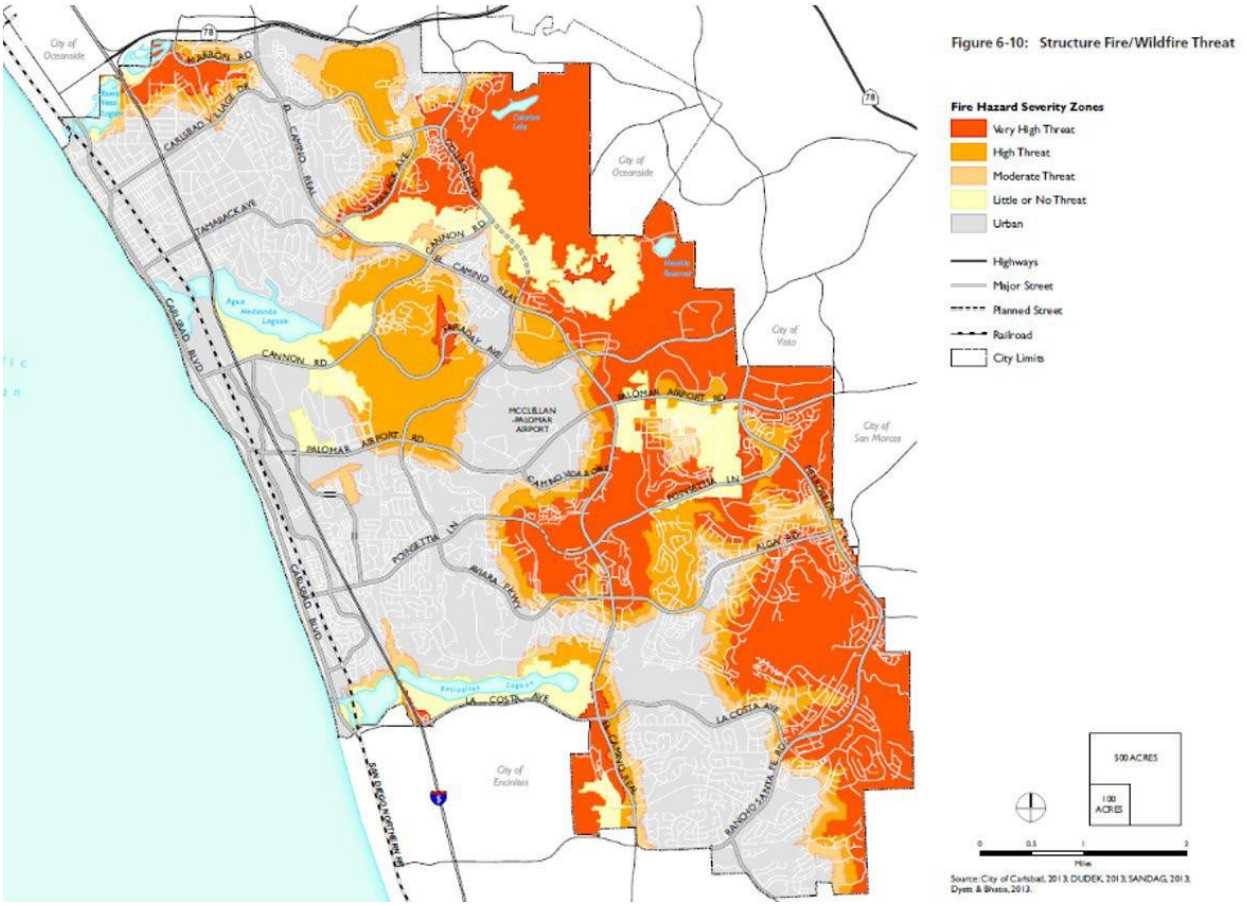
There were 10 civilian deaths, 23 civilian injuries, and 10 firefighter injuries. The cost of the fire exceeded $1.5 billion. During the May 2014 San Diego County firestorm, 14 wildfires burned near simultaneously. The second of those fires to erupt was the Poinsettia Fire in Carlsbad. Unlike many wildfires which start in rural areas of the county, the Poinsettia Fire started in the geographic center of the city. The Poinsettia Fire After Action Report, copies of which were provided to San Diego County OES and Cal OES, is filed in the City of Carlsbad EOC.

Location and Extent

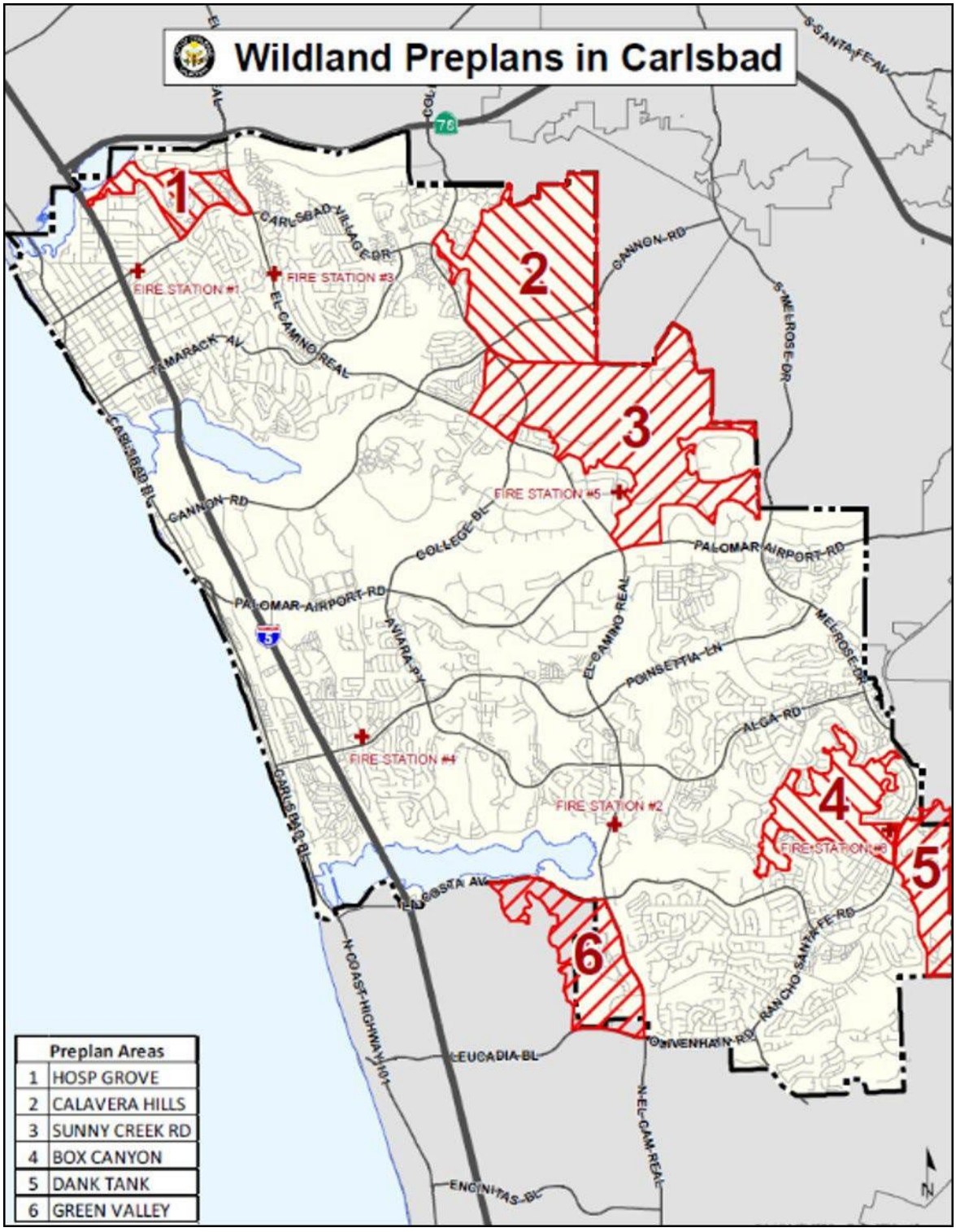
The California Department of Forestry and Fire Protection (CAL FIRE) has mapped fire threat potential throughout California. CAL FIRE ranks fire threat according to the availability of fuel and the likelihood of an area burning. The rankings include little or no fire threat, moderate, high, and very high fire threat. Large amounts of open space and wildland make Carlsbad susceptible to brush fires year-round. The proximity of native vegetation and the climate of the region contribute to a moderate to high threat of wildfires in the city.


FRAP
STATE OF CALIFORNIA
OREGON
Eureka
Redding
Sacramento
San Francisco
Fresno
Bakersfield
Los Angeles
San Bernardino
San Diego
MEXICO
NEVADA
ARIZONA
Pacific Ocean
FIRE THREAT
Extreme
Very High
High
Moderate
Low
Not Mapped
Fire threat provides a measure of fuel conditions and fire potential in the ecosystem, representing the relative likelihood of "damaging" or difficult to control wildfire occurring for a given area. Fire Threat is not a risk assessment by itself, but can be used to assess the potential for impacts on various assets and values susceptible to fire. Impacts are more likely to occur and/or be of increased severity for the higher threat classes.
Fire threat is a combination of two factors: 1) fire probability, or the likelihood of a given area burning, and 2) potential fire behavior (hazard). These two factors are combined to create 5 threat classes ranging from low to extreme.This version (fthrt14_2) is an update created from fthrt14_1 (created for the FRAP 2017 Forest and Rangeland Assessment). Fire Rotation data in fthrt14_1 was replaced with Annual Fire Probability data.
For more information, contact us by phone (916) 327-3936 or by email frapwebmaster@fire.ca.gov
©

Most of Carlsbad has only moderate fire threat; however, there is high and very high fire threat in the central and eastern portions of the city.



Based upon this information, the Carlsbad Fire Department has developed response preplans for the most likely wildland fire threats to the city. These preplan areas include: Hosp Grove, Calavera Hills, Sunny Creek Road, Box Canyon, Dank Tank and Green Valley.


Wildland Preplans in Carlsbad
1
2
3
4
5
6
FIRE STATION #1
FIRE STATION #3
FIRE STATION #5
FIRE STATION #4
FIRE STATION #2
FIRE STATION #6
CARLSBAD VILLAGE DR
EL CAMINO REAL
TAMARACK AV
CARLSBAD BL
CANNON RD
COLLEGE BL
PALOMAR AIRPORT RD
AVIARA PY
POINSETTIA LN
ALGA RD
LA COSTA AV
N COAST HIGHWAY 101
LEUCADIA BL
ENCINITAS BL
RANCHO SANTA FE RD
S SANTA FE AV
S MELROSE DR
MELROSE DR
Preplan Areas
1 HOSP GROVE
2 CALAVERA HILLS
3 SUNNY CREEK RD
4 BOX CANYON
5 DANK TANK
6 GREEN VALLEY
N

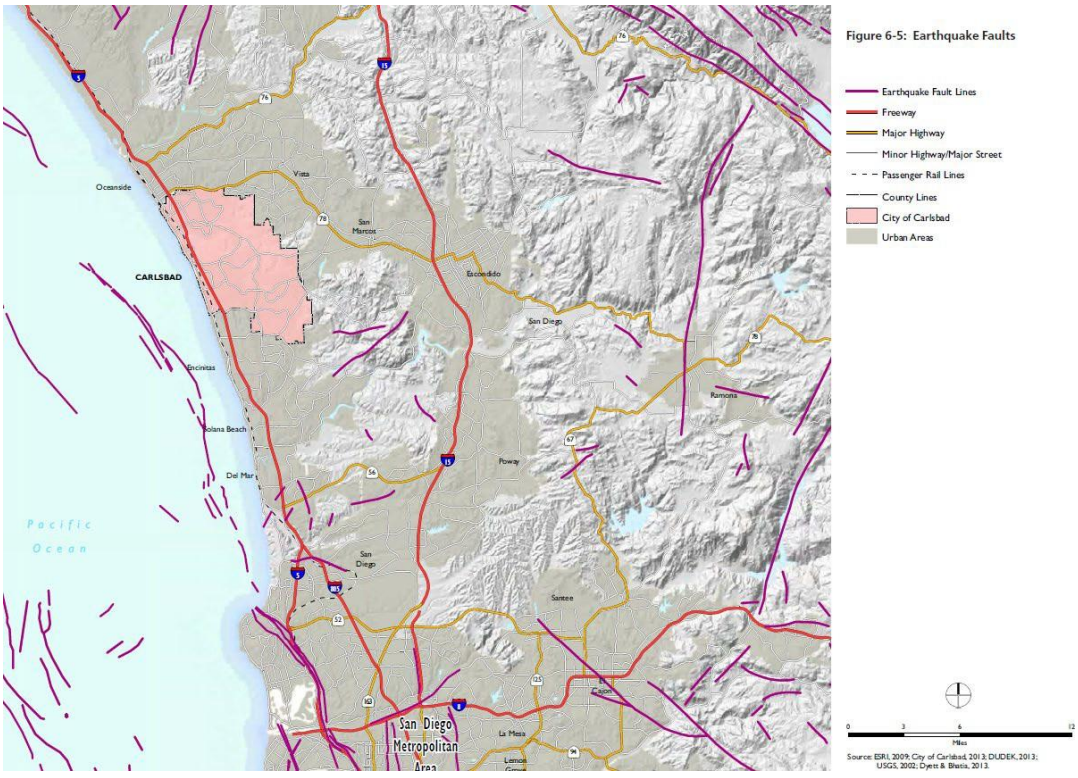
2. **Earthquake:** Recent research suggests the Newport-Inglewood-Rose Canyon Fault, which runs offshore of Carlsbad, may can produce a 7.3 quake. Such a quake might pose an increased risk to life and property, due to structural damage, liquefaction, and/or tsunami. Other faults in the region include the Coronado Bank, La Nacion, Elsinore, Agua Caliente, and San Jacinto. Although modeling suggests Carlsbad is outside of the heavy shaking and damage zones associated with a 7.8 magnitude earthquake along the San Andres fault, the city should be prepared to provide mutual aid support to those directly impacted as described in the Southern California Catastrophic Earthquake Response Plan.

Hazard Profile and Problem Description

Carlsbad lies within a medium-low probabilistic peak ground acceleration zone. There are no active faults that run directly through Carlsbad and the California Geologic Survey does not include the City of Carlsbad on its list of cities affected by the Alquist-Priolo Earthquake Fault Zoning Act.

Based on current science, local geologists do not agree earthquake swarms are an accurate indicator of pending large-scale earthquake activity.

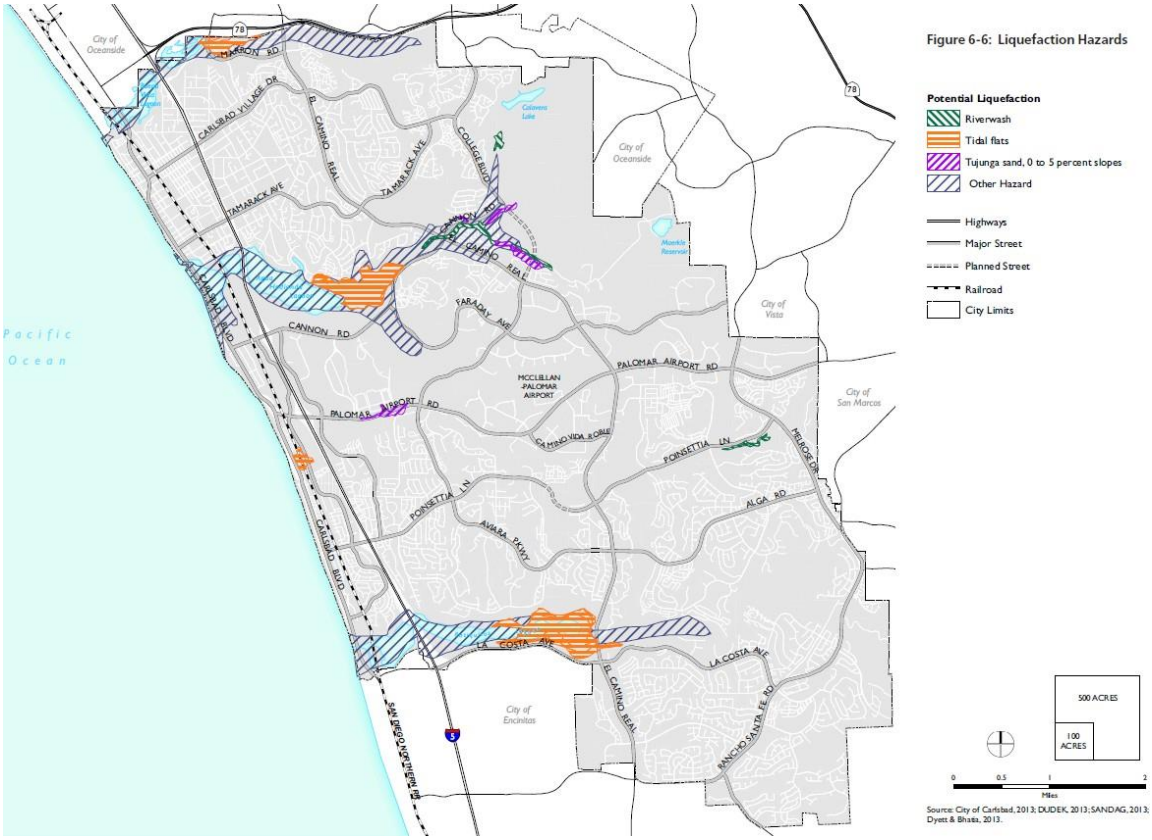
Evidence of damage should be investigated following any significant ground shaking activity in the region. Given the current technology, earthquakes are likely to be a no notice event.



Liquefaction: During an earthquake, shaking of granular loose soil saturated with water can lead to liquefaction, a condition in which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. This can weaken structural foundations. Historically, seismic shaking levels in the San Diego region, including in Carlsbad, have not been sufficient to trigger liquefaction, and as such, the city generally has a low liquefaction risk. However, there are areas of the city that have a higher risk of liquefaction due to the presence of hydric soils or soils that are often saturated or characteristic of wetlands. These areas are limited to the immediate vicinity of the Buena Vista, Agua Hedionda, and Batiquitos Lagoons.

Evidence of liquefaction-related damage should be investigated following any significant ground shaking activity in the region.

Like earthquakes, liquefaction is likely to be a no notice event. (See Appendix 2: Earthquake/Liquefaction).

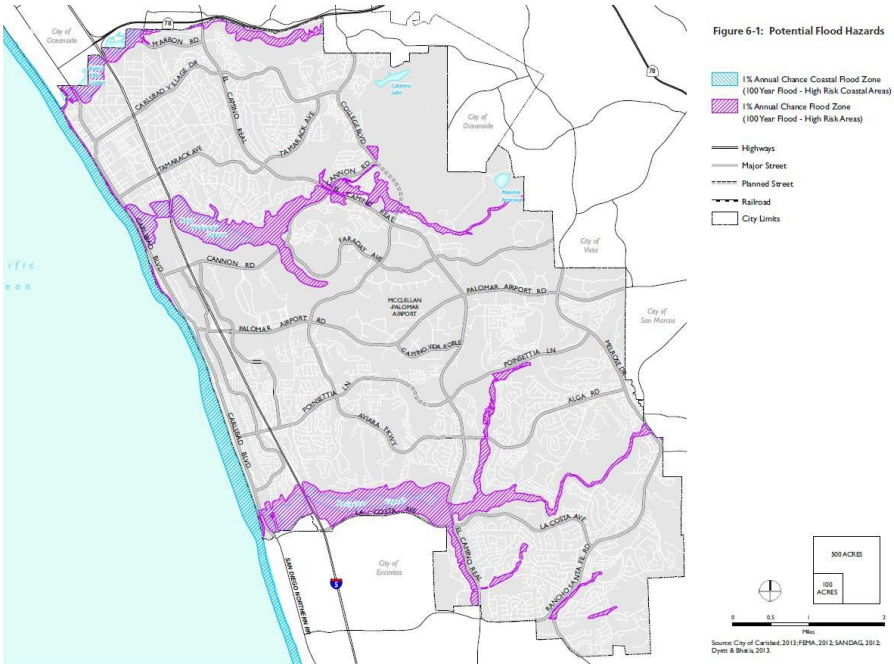


3. **Flooding:** The San Diego Region is divided into 11 hydrologic units that flow from elevated regions in the east toward coastal lagoons, estuaries, or bays in the west. Carlsbad is located within the Carlsbad Hydrologic Unit (HU), also referred to as the Carlsbad Watershed Management Area, which is approximately 210 square miles in area, extending from the headwaters above Lake Wohlford in the east to the Pacific Ocean in the west, and from Vista and Oceanside in the north to Solana Beach, Encinitas, and the community of Rancho Santa Fe to the south. There are numerous important surface hydrologic features within the Carlsbad HU including four unique coastal lagoons, three major creeks, and two large water storage reservoirs.

Hazard Profile and Problem Description

Floods are typically described in terms of their statistical frequency. For example, a 100-year floodplain describes an area within which there is a one percent probability of a flood occurring in any given year. FEMA prepares Flood Insurance Rate Maps (FIRMs) that identify 100-year and 500-year flood zones. The potential flood hazard areas identified on the FIRM maps in Carlsbad include the entire coastline, creeks and tributaries, and lagoons. Most jurisdictions within San Diego County, including the City of Carlsbad, participate in the National Flood Insurance Program. Pursuant to the City of Carlsbad's Local Coastal Plan and Carlsbad Municipal Code Title 21 (Zoning), development is restricted within 100-year floodplain areas.

The City of Carlsbad flooding response procedures were presented to the City Council in 2015. Flooding may either occur with advanced warnings or be a short notice event.



4. **Climate Change (Drought, Erosion, Extreme Cold, Extreme Heat, Sea Level Rise, Severe Winter Weather, and Storm Surge):** Climate change is not a hazard in and of itself, but rather is a factor that could affect the location, extent, probability of occurrence, and magnitude of climate-related hazards. Hazards related to the Climate Change hazard for the planning area are drought, erosion, extreme cold, extreme heat, sea level rise, severe winter weather and storm surge.

Hazard Profile and Problem Description

Higher temperatures, changes in precipitation, decreased water supplies accompanied by increased demand, increased risk of wildfire, a greater number of extremely hot days, the decline or loss of plant and animal species, and other impacts of climate change are expected to continue to affect Carlsbad.

Numerous observations document the impacts of global climate change, including increases in global average air and ocean temperatures, the widespread melting of snow and ice, more intense heat waves, and rising global average sea level. Scientists have high confidence that global temperatures will continue to rise in the foreseeable future, largely due to anthropogenic greenhouse gas emissions. In addition to the physical impacts to the environment from increased temperatures, sea level rise, and more frequent extreme weather events, global climate change is predicted to continue to cause ecological and social impacts.

Ecological impacts of climate change include greater risk of extinction of species, loss of species diversity, and alteration of global biogeochemical cycles, which play an essential role in nutrient distribution. The social impacts of climate change include impacts on agriculture, fisheries, energy, water resources, forestry, construction, insurance, financial services, tourism and recreation.

According to the Intergovernmental Panel on Climate Change (IPCC), warming of the climate system is unequivocal, as is now evident from observations of increased global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. The overwhelming majority of climate scientists agree that human activities, especially burning of fossil fuels, are responsible for most of the global warming observed.

The Scripps Institution of Oceanography planning partners define Climate Change as any systematic change in the long-term statistics of climate elements and weather events (such as temperature,

pressure, or winds) sustained over several decades or longer.91F91F91F Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.

Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use.

Hazard Impact

Coastal regions, such as Carlsbad, are vulnerable to oceanic flooding and the increasing occurrence of heat waves, whose temperatures are likely lower than in inland regions but rarely occurred historically. However, the health impacts of less intense heat waves on those living in the coastal zone may be more severe than elsewhere in the county because the population is less acclimated to the heat. Neighborhoods with less access to air conditioning and natural shading from vegetation are more susceptible to extreme heat.

While the scope, severity, and pace of future climate change impacts are difficult to fully predict, it currently impacts emergency management planning and may aggravate the magnitude and frequency of emergencies.

Climate change also has public health impacts. City residents, who are already more vulnerable to health challenges, are likely to be the most affected by climate change. Increases in extreme heat events can increase the risk of heat-related illness or death, or the worsening of chronic health conditions. Food scarcity and higher food prices from impacts to agriculture can cause increased hunger and reduced availability of nutrition.

The increased frequency of natural disasters such as floods, droughts, wildfires, and storm surges can cause injury or death, illness, and increases or shifts in infectious diseases. Global climate change may cause ecological and social impacts. Ecological impacts may include greater risk to species and habitats. Social impacts may affect food, water, livability, recreation, tourism, development, turf and landscaping, flower and strawberry production, and insurance.

Implementing appropriate warnings and communication or extremes such as heatwaves and/or smoke from wildfires and developing responses to prepare for these extremes is critically important, especially in the most vulnerable communities. To move forward, the region can assess current measures, such as cooling centers to take refuge from extreme heat, urban greening, residential and commercial structure fire resistance and community fire mitigation and escape routes.

Other ways to prevent and mitigate further impacts include:

- Testing and monitoring adaptation strategies.
- Identifying thresholds to determine when it may be necessary to relocate or redesign infrastructure.
- Continual improvement of extreme forecasts to allow longer lead times to prepare for the extremes.

By assessing ongoing changes in risk—in addition to the traditional practice of risk assessment based on observed hazard events—this plan's hazard mitigation strategies can better reduce risk from hazards expected going forward. In general, to prepare and mitigate impacts of climate change, develop integrated multi-agency, multi-jurisdiction approach that uses best information, best practices, and considers the needs of under-resourced, disadvantaged communities and individuals.

5.1.2 Hazard Omission Rationale

Hazard	Description	Reason for Exclusion
Avalanche	A mass of snow moving down a slope. There are two basic elements to a slide: A steep, snow-covered slope and a trigger	Snowfall in city foothills is negligible; poses no threat compared to other hazards
Dam Failure	A dam failure can take several forms, including a collapse of, or breach in, the structure. While most dams have storage volumes small enough that failures have few or no repercussions, dams storing large amounts can cause significant flooding downstream.	Historically, only two major dam failures have been recorded in San Diego County: The Hatfield Flood of 1916 caused the failure of the Sweetwater and Lower Otay Dams.
Expansive Soils	Expansive soils shrink when dry and swell when wet. This movement can exert enough pressure to crack sidewalks, driveways, basement floors, pipelines and even foundations	Presents a minor threat to limited portions of the city
Hail	Can occur during thunderstorms that bring heavy rains, strong winds, hail, lightning, and tornadoes	Occurs during severe thunderstorms; most likely to occur in the central and southern states; no historical record of this hazard in the region.
Hurricane	Hurricanes, tropical storms, nor'easters, and typhoons, also classified as cyclones, include any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise in the northern hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters.	Prevailing winds take hurricane tracks westward off of Northern Baja and the few that may drift further north dissipate in the colder offshore waters and become rainmakers rather than causing destructive winds.
Lightning	Lightning is defined by the NWS as any and all of the various forms of visible electrical discharge caused by thunderstorms.	The US National Centers for Environmental Information reports that the County averages only three days of lightning a year, making it a minor threat compared to other hazards.
Severe Wind	Severe wind is commonly associated with severe thunderstorm winds, severe winter storms (exceeding 58 mph) and tornadoes.	Maximum sustained wind speed recorded in the region is less than 60 miles per hour and would not be expected to cause major damage or injury.

Subsidence	Occurs when large amounts of ground water have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rocks fall in on themselves.	Soils in the County are mostly granitic. Presents a minor threat to limited parts of the county. No historical record of this hazard in the region.
Tornado	A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes because of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris.	Less than one tornado event occurs in the entire State of California in any given year; poses very minor threat compared to other hazards. No historical record of this hazard in the region.
Tsunami	Tsunamis are a series of large waves of extremely long wavelength and period usually generated by a violent, impulsive undersea disturbance or activity near the coast or in the ocean. When a sudden displacement of a large volume of water occurs (or if the sea floor is suddenly raised or dropped by an earthquake) big tsunami waves can be formed.	Historic seismic shaking levels in the San Diego region, including in Carlsbad, have not been sufficient to trigger tsunamis, and as such, the city generally has a low tsunami risk.

5.2 Potential Hazard Exposure and Loss Estimates

The City of Carlsbad reviewed a set of jurisdictional-level hazard maps and data provided by the County of San Diego, including detailed critical facility information and localized potential hazard exposure/loss estimates related to residential, commercial, and critical asset/facilities to identify the top hazards threatening the city. Potential hazard exposure/loss estimates are summarized in Table 5.2.

According to the 2022 FEMA Repetitive Loss Summary Report, City of Carlsbad has one Repetitive Loss property, and zero Severe Repetitive Loss properties. The Repetitive Loss property is nonresidential.

TABLE 5.2: SUMMARY OF POTENTIAL HAZARD-RELATED EXPOSURE/LOSS IN CITY OF CARLSBAD.

		Residential		Commercial		Critical Facilities	
Hazard Type	**Exposed Population-2022**	**Number of Residential Buildings - 2022**	**Potential Exposure Loss for Residential Buildings-2022**	**Number of Commercial Buildings-2022**	**Potential Exposure Loss for Commercial Buildings-2022**	**Number of Critical Facilities-2022**	**Potential Exposure for Critical Facilities-2022**
Coastal Storm	341	16	6,217,600	0	0	0	0
Sea Level Rise							
Coastal Flooding	622	21	8,160,600	4	1,209,400	10	63,690,000
Mean Higher High Water	70	1	388,600	0	0	4	24,780,000
Dam Failure	1,258	523	203,237,800	24	7,256,400	5	29,728,000
Earthquake (Loss)							
(Annualized Loss - Includes shaking, liquefaction and landslide components)	1067	6314	3,079.694,441	377	165,506,390	Info not provided in county table	Info not provided in county table
100 Year	Info not provided in county table	Info not provided in county table	Info not provided in county table	Info not provided in county table	Info not provided in county table	Info not provided in county table	Info not provided in county table
500 Year	19,092	4,538	1,763,466,800	352	106,427,200	4	143,152,000
Floods (Loss)							
100 Year	2,497	619	240,543,400	15	4,535,250	19	123,880,000
500 Year	2,497	619	240,543,400	15	4,535,250	19	123,880,000

	Residential			Commercial		Critical Facilities	
Hazard Type	**Exposed Population-2022**	**Number of Residential Buildings - 2022**	**Potential Exposure Loss for Residential Buildings - 2022**	**Number of Commercial Buildings-2022**	**Potential Exposure Loss for Commercial Buildings - 2022**	**Number of Critical Facilities-2022**	**Potential Exposure for Critical Facilities- 2022**
Wildfire/Structure Fire							
High Fire Hazard	24,365	8,513	3,307,300,500	238	71,959,300	19	682,173,700
Very High Fire Hazard	19,479	5,075	1,972,145,000	561	169,618,350	17	383,777,700
Rain-Induced Landslide							
High Risk	2,163	24	9,324,000	1	302,350	0	0
Moderate Risk	0	0	0	0	0	0	0
Tsunami	4,259	114	44,300,400	1	302,350	9	60,030,000

5.3 Development Trends

Development Since 2018 Plan

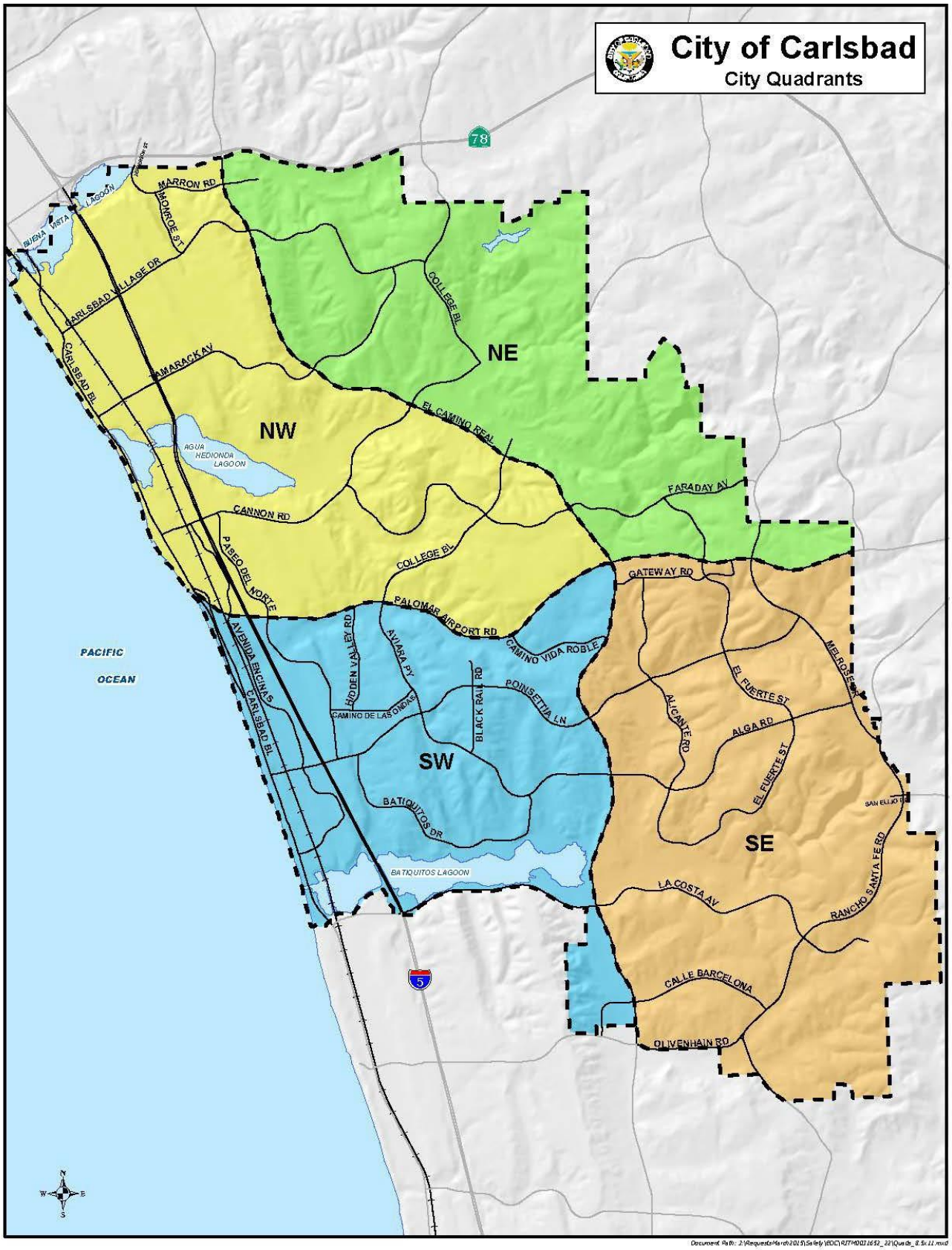
City of Carlsbad Community Development Department tracks total building permits issued from July 1, 2017, to June 30, 2022. A summary of this development is shown in Table XXX. The development in the identified hazard areas, including the 1% annual chance floodplains and high wildfire risk areas, were completed in accordance with all current and applicable development codes and standards and should be adequately protected. Thus, with the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in City's vulnerability to identify priority hazards.

The City issued permits for more than 1,300 new dwelling units and over 2.6 million square feet of non-residential (e.g., commercial and industrial) space. By fiscal year and quadrant, this new construction breaks down as follows:

5.3 Table: City of Carlsbad Development July 1, 201, to June 30, 2022

Dwellings and Non-residential Square Permitted[1]										
Fiscal year	Dwelling units permitted	Percent of units by quadrant				Non-residential square feet permitted	Percent of units by quadrant			
		NW	NE	SW	SE		NW	NE	SW	SE
2017-2018	341	31%	62%	3%	4%	1,643,467	7%	39%	4%	50%
2018-2019	375	34%	41%	5%	21%	315,194	46%	28%	1%	25%
2019-2020	242	34%	12%	25%	28%	372,455	21%	71%	2%	6%
2020-2021	251	48%	16%	28%	8%	216,834	5%	83%	0%	11%
2021-2022	111	65%	5%	14%	16%	107,935	91%	0%	0%	9%
Total units	**1,320**	**39%**	**33%**	**13%**	**15%**	**2,655,885**	**17%**	**44%**	**3%**	**36%**
[1]Source: Growth Management Plan Monitoring Reports for Fiscal Years 2017-2018 through 2020-2021; Development Monitoring Reports for May 2022 and October 2022.										

The city uses quadrants to identify four major sections of the city from its major arterial roads, El Camino Real and Palomar Airport Road being the dividing intersections for each quadrant. Figure XXX identifies those areas.


City of Carlsbad
City Quadrants
NE
NW
SW
SE
PACIFIC
OCEAN
78
5
MARRON RD
BUENA VISTA LAGOON
BUENA VISTA
CARLSBAD VILLAGE DR
CARLSBAD BL
TAMARACK AV
AGUA HEDIONDA LAGOON
COLLEGE BL
EL CAMINO REAL
FARADAY AV
CANNON RD
PASEO DEL NORTE
PALOMAR AIRPORT RD
GATEWAY RD
AVENIDA ENCINAS
HIDDEN VALLEY RD
AVIARA PY
CAMINO VIDA ROBLE
CAMINO DE LAS OMDAS
BLACK RAIL RD
POINSETTIA LN
ALICANTE RD
EL FUERTE ST
MELROSE DR
ALGA RD
BATIQUITOS DR
BATIQUITOS LAGOON
SAN ELIJO RD
LA COSTA AV
RANCHO SANTA FE RD
CALLE BARCELONA
OLIVENHAIN RD

The permitted commercial and industrial construction noted in the table occurred or is occurring in existing developed areas, such as business and industrial parks. Similarly, construction of the more than 1,300 new homes occurred or is underway as infill development dispersed throughout the city in older neighborhoods, previously approved master plans and in Carlsbad's downtown.

In Section 5.1, Hazards Summary, wildfire is the only hazard identified with a "high" significance ranking due in part to the Carlsbad's large amount of natural open space, largely occurring in the hills and valleys in the eastern third of the city. Many of these areas and adjacent developed lands are within the Very High or High Fire Hazard Severity Zones as identified by the California Department of Forestry and Fire Protection. As the table above demonstrates, most (72 percent) residential construction since 2017-2018 has occurred in the northern half of the city, with slightly more development in the northwest (39 percent) than the northeast (33 percent). The two quadrants with the greatest non-residential construction since 2017- 2018 include the northeast (44 percent) and the southeast (36 percent).

While development has continued to occur in areas of the city assessed to be higher fire hazard risk, three factors help to mitigate vulnerability: lower population density of non-residential construction types, implementation of modern codes and development standards, and development of infill locations.

The non-residential development is reported in terms of square footage, which is disproportionately high when compared to number of employees in business park/industrial park settings typical of Carlsbad. As such, high square footage is not synonymous with high population and/or at-risk populations. Secondly, the development occurring in the past five years has been evaluated for consistency with modern city codes, standards and land use regulations, including the Growth Management Plan, which requires all necessary infrastructure (roads, utilities, public safety facilities, etc.), to be installed concurrent with need. The guarantee of facilities ensures that both public safety infrastructure and service capacity grow to meet the needs of additional areas and populations and maintain desired levels of service. Finally, as previously mentioned, the growth that is occurring within the city is largely infill, taking place on vacant or underdeveloped lots surrounded by existing buildings and infrastructure. While development is occurring within areas that have been assessed as higher fire risk, it does not represent a trend of creating additional wildland-urban interface or development in additional risk areas.

Future Development

Looking to the future, residential and non-residential development will continue to be characterized as infill, whether in the city's downtown, master plan areas or business parks. A notable exception is the city's Sunny Creek area east of El Camino Real and north of Faraday Avenue. While much of this area is set aside as permanent open space, some areas are vacant and remain developable. Some developable portions of Sunny Creek are in the identified fire hazard zones. Any development applications submitted in the Sunny Creek area will be evaluated by city staff for consistency with all applicable codes, regulations, and standards to ensure the necessary infrastructure is in place to serve and protect future homes and businesses.

6. SECTION SIX: Develop a Mitigation Strategy

The mitigation strategy serves as the long-term blueprint for reducing potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process.

The mitigation strategy is made up of three main required components: mitigation goals, mitigation actions, and an action plan for implementation. These provide the framework to identify, prioritize, and implement actions to reduce risk to hazards.

Mitigation goals are general guidelines that explain what the community wants to achieve with the plan They are usually broad policy-type statements that are long-term, and they represent visions for reducing or avoiding losses from the identified hazards

Mitigation actions are specific projects and activities that help achieve the goals.

The action plan describes how the mitigation actions will be implemented, including how those actions will be prioritized, administered, and incorporated into the community's existing planning mechanisms. In a multi-jurisdictional plan, each jurisdiction must have an action plan specific to that jurisdiction and its vulnerabilities.

Although not required, some communities choose to develop **objectives** to help define or organize mitigation actions. Objectives are broader than specific actions, but are measurable, unlike goals. Objectives connect goals with the actual mitigation actions

6.1. Mitigation Action Evaluation

Use this worksheet to help evaluate and prioritize each mitigation action being considered by the planning team. For each action, evaluate the potential benefits and/or likelihood of successful implementation for the criteria defined below.
Rank each of the criteria with a -1, 0 or 1 using the following scale:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Example Evaluation Criteria:

- **Life Safety** – How effective will the action be at protecting lives and preventing injuries?
- **Property Protection** – How significant will the action be at eliminating or reducing damage to structures and infrastructure?
- **Technical** – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
- **Political** – Is there overall public support for the mitigation action? Is there the political will to support it?
- **Legal** – Does the community have the authority to implement the action?
- **Environmental** – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
- **Social** – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

- **Administrative** – Does the community have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
- **Local Champion** – Is there a strong advocate for the action or project among local departments and agencies that will support the action's implementation?
- **Other Community Objectives** – Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of the comprehensive plan?

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Structure and Infrastructure Projects											
GOAL 1: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to structure fire/wildland fire											
Develop a comprehensive approach to reducing the possibility of damage and losses due to structure fire/wildland fire	1	1	1	1	1	1	1	1	1	1	**10**
Coordinate with and support existing efforts to mitigate structural fire/wildland fire	1	1	1	1	1	1	1	1	1	1	**10**
Maintain GIS mapping to best reflect potential vulnerability of assets from structural fire/wildland fire	1	1	1	1	1	0	0	1	0	1	**7**
Maintain adequate emergency response capability	1	1	0	1	1	0	0	1	1	1	**7**
TOTAL SCORE	4	4	3	4	4	2	2	4	3	4	**34**

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Structure and Infrastructure Projects (continued)											
GOAL 2: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to earthquakes/liquefaction											
Develop a comprehensive approach to reducing the possibility of damage and losses due to earthquakes	1	1	1	1	1	0	1	1	0	1	**8**
Protect existing assets with the highest relative vulnerability to the effects of earthquakes	1	1	0	1	1	1	0	1	0	0	**6**
Coordinate with and support existing efforts to mitigate earthquake hazard	1	1	1	1	1	0	0	1	0	1	**7**
Community outreach	1	0	1	1	0	0	1	1	0	0	**5**
TOTAL SCORE	4	3	3	4	3	1	2	4	0	2	**26**

GOAL 3: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to hazardous materials											
Develop a comprehensive approach to reducing the possibility of damage and losses due to hazardous materials-related hazards	1	0	1	1	1	1	1	1	0	1	**8**
Increase awareness and knowledge of hazardous materials mitigation principles and practice among local officials	1	0	0	1	1	0	1	1	0	1	**6**
TOTAL SCORE	2	0	1	2	2	1	2	2	0	2	**14**

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Structure and Infrastructure Projects (continued)											
GOAL 4: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to severe winter storms/flooding											
Develop a comprehensive approach to reduction the possibility of damage and losses due to severe winter storms/flooding	1	1	1	1	1	1	0	1	0	1	**8**
Protect existing assets with the highest relative vulnerability to the effects of floods (100-year floodplain)	1	1	1	1	1	1	1	1	0	1	**9**
Protect floodplains from inappropriate development	1	1	1	1	1	1	1	1	0	1	**9**
TOTAL SCORE	3	3	3	3	3	3	2	3	0	3	**26**
GOAL 5: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to climate change											
Develop a comprehensive approach to reducing the possibility of damage and losses due to climate change	1	1	1	1	1	1	1	1	1	1	**10**
Increase awareness and knowledge of climate change among senior city leadership and/or local officials	1	0	1	1	1	1	1	1	1	1	**9**
Increase public awareness and knowledge of damages and losses due to climate change through community awareness	1	1	0	1	1	0	1	1	1	1	**8**
TOTAL SCORE	1	1	0	1	1	0	1	1	1	1	**27**

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Structure and Infrastructure Projects (continued)											
GOAL 6: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to dam failure											
Develop a comprehensive approach to reduction the possibility of damage and losses due to dam failure	1	1	1	1	1	1	0	1	0	1	**8**
Coordinate with and support existing efforts to mitigate dam failure (e.g., US Army Corps of Engineers, US Bureau of Reclamation, California Department of Water Resources)	0	0	1	1	1	1	1	1	1	1	**8**
Protect inundation areas from inappropriate development	1	1	1	1	1	1	1	1	0	1	**9**
TOTAL SCORE	2	2	3	3	3	3	2	3	1	3	**25**
GOAL 7: Reduce the possibility of damage and losses to existing assets, including people and critical infrastructure, due to IT vulnerabilities/cyber insecurities											
Develop a comprehensive approach to reducing the possibility of damage and losses due to IT vulnerabilities/cyber insecurities	0	0	1	1	1	0	0	1	0	0	**1**
Increase awareness and knowledge of IT vulnerabilities/cyber insecurities among senior city leadership and/or local officials	0	0	1	1	1	0	0	1	1	1	**6**
Prepare cyber security plans and policy	0	0	1	1	1	0	0	1	0	1	**5**
TOTAL SCORE	0	0	3	3	3	0	0	3	1	2	**12**

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Natural Systems Protection											
The City of Carlsbad has no mitigation actions related to natural systems protection											

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Education and Awareness Programs											
GOAL 8: Increase public understanding and support for effective hazard mitigation											
Educate the public to increase awareness of hazards and opportunities for mitigation actions	1	0	0	1	1	1	0	1	0	1	**6**
Promote partnerships between the state, counties, and local jurisdictions and agencies to identify, prioritize, and implement mitigation actions	1	0	0	1	1	1	1	1	1	1	**8**
Work with the Chamber of Commerce, businesses, and other local agencies to promote hazard mitigation in the local community	1	1	0	1	1	1	1	1	1	1	**9**
TOTAL SCORE	3	1	0	3	3	3	2	3	2	3	**23**
GOAL 9: Build and maintain local capacity and commitment to hazard mitigation goals											
Increase awareness and knowledge of hazard mitigation principles and practice among local officials	1	1	1	1	1	1	1	1	0	1	**9**
Implement actions associated with hazard mitigation plan	1	0	0	0	1	1	0	1	0	1	**5**
Continue GIS mapping of potential hazard areas	1	1	1	0	1	1	0	1	0	1	**7**
TOTAL SCORE	3	2	2	1	3	3	1	3	0	3	**21**

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Education and Awareness Programs (continued)											
GOAL 10: Increase situational awareness of MJHMP, natural, technological, and human causes hazards identified in the Emergency Operations Plan (EOP)											
Integrate MJHMP into other city planning documents	1	1	1	1	1	1	1	1	0	1	**9**
Include at CEMAT, CERT, and Ready Carlsbad Business Alliance (RCBA) elements of MJHMP and EOP as regular part of agenda discussion	1	1	1	0	0	1	1	1	1	1	**8**
Share EOC operational environment and situational awareness displays utilizing technology such as Microsoft Teams and Zoom	1	1	1	0	1	1	0	1	0	1	**7**
TOTAL SCORE	3	3	3	1	2	3	2	3	1	3	**24**

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Local Plans and Regulations											
GOAL 11: Update Carlsbad's General Plan to support hazard mitigation efforts											
Address climate change adaptation and resiliency strategies	1	0	1	1	1	1	1	1	1	1	9
Address in the housing element and safety element of the General Plan a risk assessment associated with hazards which may require enhanced evacuation strategies	1	0	1	1	1	0	1	1	1	1	**8**
TOTAL SCORE	2	0	2	2	2	1	2	2	2	2	**17**

TABLE 10: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 6.1 DATA.

6.1.1. Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation:

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Community Development Block Grants (CDBG)	Yes	Previous mitigation measures and available for future mitigation actions if needed
Capital improvements project funding	Yes	Previous mitigation measures and available for future mitigation actions if needed
Authority to levy taxes for specific purposes	Yes	Previous mitigation measures and available for future mitigation actions if needed
Fees for water, sewer, gas, or electric service	Yes	Previous mitigation measures and available for future mitigation actions if needed
Impact fees for homebuyers or developers for new developments/homes	Yes	Previous mitigation measures and available for future mitigation actions if needed
Incur debt through general obligation bonds	Yes	Previous mitigation measures and available for future mitigation actions if needed
Incur debt through special tax and revenue bonds	Yes	Previous mitigation measures and available for future mitigation actions if needed
Incur debt through private activity bonds	Yes	Previous mitigation measures and available for future mitigation actions if needed
Capital improvements project funding	Yes	Previous mitigation measures and available for future mitigation actions if needed
Authority to levy taxes for specific purposes	Yes	Previous mitigation measures and available for future mitigation actions if needed

How can these capabilities be expanded and improved to reduce risk?
The City may update existing policies, plans, and programs, such as the Capital Improvement Program (CIP). Updates may be to incorporate hazard information and to include hazard mitigation actions and climate adaptation strategies that relate to infrastructure systems resiliency associated with the water and wastewater systems. Approved projects related to hazard mitigation, including the CIP, are available on the city's webpage. (Projects in the Works | Carlsbad, CA (carlsbadca.gov) Also, capital investments and improvements related to seismic retrofits, cooling center upgrades, water supply systems, and wastewater treatment plan (WWTP) upgrades may be added to outreach materials as they are related to hazard mitigation. Additionally, given the prioritization of flooding mitigation projects, the city may apply for HMGP grants to fund implementation costs associated with key CIP projects and related projects in the city's mitigation strategy. These fiscal capabilities may be supported by city staff or augmented with consultant staff.

TABLE 11: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 4.1 DATA CONTINUED.

6.2. Mitigation Action Implementation

A mitigation action is a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan's mission and goals. The actions to reduce vulnerability to threats and hazards form the core of the plan and are a key outcome of the planning process. This annex details the following mitigation action implementations:

6.2.1 **Hazard Mitigation Action Plan**

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Support and maintain a comprehensive approach to reduce the possibility of damage and losses due to structure fire/wildland fire	Structure & Wildland Fire	1	High	Carlsbad Fire Prevention Carlsbad Community Development Carlsbad Fire Department	Costs undetermined/ General Fund	2023-2028	Ensure adherence to current state and federal codes for development and open space areas and ensure City plans are updated through a comprehensive approach. Minimize loss of life, structures and protected environmental space.
Support existing efforts to mitigate structural fire/wildland fire	Structure & Wildland Fire	1	High	Carlsbad Fire Prevention Carlsbad Fire Department Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure adherence to current state and federal codes for development and open space areas and ensure City plans are updated through a comprehensive approach. Minimize loss of life, structures and protected environmental space.
Maintain GIS mapping capabilities to reflect potential vulnerability of assets from structural fire/wildland fire	Structure & Wildland Fire	1	High	Carlsbad GIS Carlsbad Emergency Services	No funding required	2023-2028	An ongoing effort of Carlsbad Emergency Services, Carlsbad Fire Department and Carlsbad GIS is to ensure city readiness with current GIS mapping. Support City's readiness to respond to and recover from a disaster or emergency.
Maintain emergency response capabilities	Structure & Wildland Fire	1	High	Carlsbad Fire Department Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure emergency plans, annexes and appendices are updated to current state, county, and local requirements. Provide for ongoing review process to ensure emergency response capabilities. Ensure City's readiness to respond to and recover from a disaster or emergency.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
							Minimize loss of life, structures and protected environmental space.
Support and maintain a comprehensive approach to reduce the possibility of damage and losses due to earthquakes	Earthquake	2	Medium	Carlsbad Fire Prevention Carlsbad Community Development Carlsbad Fire Department	Costs undetermined/ General Fund	2023-2028	Ensure adherence to current state and federal codes for new construction and ensure City plans are updated through a comprehensive approach. Minimize loss of life, structures and protected environmental space.
Protect existing assets with the highest relative vulnerability to the effects of earthquakes	Earthquake	2	Medium	Carlsbad Emergency Services Carlsbad Fleet & Facilities Carlsbad Construction	Costs undetermined/ General Fund	2023-2028	Ensure adherence to current state and federal codes for new development and retrofit structures and ensure City plans are updated through a comprehensive approach. Minimize loss of life and structures space.
Support existing efforts to mitigate earthquake hazards	Earthquake	2	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure adherence to current state and federal codes for development and open space areas and ensure City plans are updated though a comprehensive approach. Minimize loss of life, structures and protected environmental space.
Support community outreach efforts related to hazard mitigation	Earthquake	2	Medium	Carlsbad Emergency Services Carlsbad Communication & Engagement	Costs undetermined/ General Fund	2023-2028	This action will build upon Emergency Services community outreach and education efforts related to overall preparedness and response to potential earthquakes.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Support and maintain a comprehensive approach to reducing the possibility of damage and losses due to hazardous materials-related hazards	Wildfire, Manmade	3	Low	Carlsbad Fire Department Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure adherence to current state and county requirements for the reporting and storage of hazardous materials. Ensure City plans are updated with current requirements. Minimize loss of life, structures and protected environmental space.
Support ongoing awareness of hazardous materials mitigation principles and practice among local officials	Wildfire, Manmade	3	Low	Carlsbad Fire Department Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Provide routine presentations to local officials on hazardous materials mitigation efforts.
Support and maintain a comprehensive approach to reduce the possibility of damage and losses due to severe winter storms/flooding	Flooding, Climate Change (Severe Winter Weather, and Storm Surge)	4	Medium	Carlsbad Public Works Carlsbad Community Development Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure City current and future infrastructure and development goals and plans reflect current state and county regulations, requirements, and plans. Minimize loss of life, structures, city infrastructure and open space.
Protect existing assets with the highest relative vulnerability to the effects of floods (100-year floodplain)	Flooding, Climate Change (Severe Winter Weather, and Storm Surge)	4	Medium	Carlsbad Public Works Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure City current and future infrastructure and development goals and plans reflect current state and county regulations, requirements, and plans. Minimize loss of life, structures, city infrastructure and open space.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Support protection of floodplains from inappropriate development	Flooding, Climate Change (Severe Winter Weather)	4	Medium	Carlsbad Community Development Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure adhere to federal, state and county regulations and guidance in development in flood-prone areas. Minimize loss of life, structures, City infrastructure and open space.
Support and maintain a comprehensive approach to reduce the possibility of damage and losses due to climate change	Climate Change (Drought, Extreme Heat, Severe Winter Weather)	5	Medium	Carlsbad Public Works-Environmental Sustainability Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Continue update of City's existing Climate Action Plan to reflect current regulations, best practices, and community involvement to reduce possible damage or loss due to climate change. Meet or exceed federal and state requirements for climate change related mitigation.
Support ongoing awareness of climate change among senior city leadership and/or local officials	Climate Change (Drought, Extreme Heat, Severe Winter Weather)	5	Medium	Carlsbad Public Works-Environmental Sustainability Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Provide presentations to City Council with update on City's Climate Action Plan goals and priorities. Meet or exceed state and federal requirements for reduction in greenhouse gas emissions.
Support public awareness and knowledge of damages and losses due to climate change through community awareness	Climate Change (Drought, Extreme Heat, Severe Winter Weather, Sea Level Rise)	5	Medium	Carlsbad Public Works-Environmental Sustainability Carlsbad Communications & Engagement	Costs undetermined/ General Fund	2023-2028	Provide public education materials through City website, social media channels, community outreach events and Earth Month activities. Meet or exceed state and federal requirements for reduction in greenhouse gas emissions. Meet or exceed state recycling mandates.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Support and maintain a comprehensive approach to reduce the possibility of damage and losses due to dam failure	Climate Change (Drought, Extreme Heat, Severe Winter Weather, Sea Level Rise)	6	Medium	Carlsbad Public Works - Utilities Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Adhere to state, county and local jurisdiction regulations and requirements for dam operations, maintenance, and inspections. Ensure awareness of Maerkle and Lake Calavera Dam Emergency Action Plans
Support existing efforts to mitigate dam failure (e.g., US Army Corps of Engineers, US Bureau of Reclamation, California Department of Water Resources)	Climate Change (Drought, Extreme Heat, Severe Winter Weather, Sea Level Rise)	6	Medium	Carlsbad Public Works - Utilities Carlsbad Public Works - Engineering	Costs undetermined/ General Fund	2023-2028	Continue to follow regulations and best practices as required by regulatory agencies on dam operations and maintenance. Support current regulations and requirements. Minimize possibility of dam failure or impact of emergency situations.
Protect inundation areas from inappropriate development as appropriate	Climate Change (Drought, Extreme Heat, Severe Winter Weather, Sea Level Rise)	6	Medium	Carlsbad Public Works - Utilities Carlsbad Public Works – Engineering Carlsbad Community Development	Costs undetermined/ General Fund	2023-2028	Review development design standards for all flood-prone areas within jurisdiction.
Support and maintain a comprehensive approach to reduce the possibility of damage and loss due to IT and Cybersecurity threats	Cybersecurity	7	Medium	Carlsbad Information Technology Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Educate city staff and local officials on Cybersecurity threats and best practices. Minimize Cybersecurity risks to city data and assets.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Support ongoing awareness of IT and Cybersecurity threats among senior city leadership and/or local officials	Cybersecurity	7	Medium	Carlsbad Information Technology Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Provide routine presentations to leadership and City Council on IT vulnerabilities and Cybersecurity risks. Support awareness among leadership and local officials.
Maintain Cybersecurity plans and policies	Cybersecurity	7	Medium	Carlsbad Information Technology Carlsbad Leadership Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Update existing plans and policies as needed based on federal and state government guidance and industry best practices, Minimize Cybersecurity risks to city data and assets.
Educate the public to increase awareness of hazards and mitigation opportunities	High Significant Hazard, All Hazards	8	Medium	Carlsbad Emergency Services Carlsbad Fire Prevention	Costs undetermined/ General Fund	2023-2028	Continue to provide community education outreach on hazards and mitigation actions. Increase community awareness and engagement on how to mitigate hazards.
Promote partnerships between the state, counties, and local jurisdictions and agencies to identify, prioritize, and implement mitigation actions	High Significant Hazard, All Hazards	8	Medium	Carlsbad Emergency Services Other City departments tasked with LHMP actions or hazard mitigation	Costs undetermined/ General Fund	2023-2028	Serve as an active member of county and local jurisdiction committees, agencies and community partners that support hazard mitigation. Reinforce a coordinated partnership among the agencies and community partners in hazard mitigation.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Collaborate with the Chamber of Commerce, businesses, and other local agencies to promote hazard mitigation in the local community	High Significant Hazard, All Hazards	8	Medium	Carlsbad Emergency Services Other relevant City departments	Costs undetermined/ General Fund	2023-2028	Continue to engage Chamber members through Ready Carlsbad Business Alliance on key hazard mitigation strategies for businesses. Continue to engage Carlsbad school districts on key hazard mitigation strategies for schools. Minimize loss of life, structures and financial impact to businesses due to a disaster or emergency.
Support ongoing awareness of hazard mitigation principles and practice among local officials	High Significant Hazard, All Hazards	9	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Submit County of San Diego 2023-2028 MJHMP for City Council approval. Provide staff reports or presentations to City Council as needed. Support ongoing awareness among local officials.
Implement actions associated with the MJHMP	High Significant Hazard, All Hazards	9	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Work with lead agency and supporting departments to ensure action items are reviewed for status updates on a routine basis. Support a jurisdiction with an updated, well-rounded approach to hazard mitigation.

Action Items	Hazards	Goals	Priority	Lead Agency/ Supporting Departments	Estimated Costs & Possible Funding	Timeline	Ideas for Integration Benefits: (Losses Avoided)
Continue GIS mapping of potential hazard areas	High Significant Hazard, All Hazards	9	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	An ongoing effort of Carlsbad Emergency Services, Carlsbad Fire Department and Carlsbad GIS is to ensure city readiness with current GIS mapping
Integrate MJHMP into other city planning documents as appropriate	High Significant Hazard, All Hazards	10	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Work with city staff tasked with updating city plans (e.g., General Plan-Public Safety & Housing elements) to support integration of MJHMP. Support a coordinated effort to ensure key actions and requirements are part of the other city plan as appropriate.
Include hazard mitigation in agenda discussions with CERT and Ready Carlsbad Business Alliance (RCBA)	High Significant Hazard, All Hazards	10	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Incorporate MJHMP action items into seasonal hazard discussions, e.g., October-earthquakes. Support City's community resilience goal to education residents and businesses on preparedness and response needs.
Share EOC operational environment and situational awareness displays utilizing technology such as Microsoft Teams and Zoom	High Significant Hazard, All Hazards	10	Medium	Carlsbad Emergency Services	Costs undetermined/ General Fund	2023-2028	Ensure technology upgrades for buildout of City's EOC to support expanding technology needs. Supports city's readiness in responding to a disaster or emergency in an in-person or virtual EOC environment

7. SECTION SEVEN: Keep the Plan Current

Hazard Mitigation Plan maintenance is the process the planning team establishes to track the plan's implementation progress and to inform the plan update. The plan must include a description of the method and schedule for monitoring, evaluating, and updating it within a 5-year cycle. These procedures help to:

- Ensure that the mitigation strategy is implemented according to the plan.
- Provide the foundation for an ongoing mitigation program in your community.
- Standardize long-term monitoring of hazard-related activities.
- Integrate mitigation principles into community officials' daily job responsibilities and department roles.
- Maintain momentum through continued engagement and accountability in the plan's progress.

Hazard Mitigation Plan updates provide the opportunity to consider how well the procedures established in the previously approved plan worked and revise them as needed. This annex is part of the most recent *San Diego County Multi-Jurisdictional Hazard Mitigation Plan* update. The plan was last updated in 2018. See the *San Diego County Multi-Jurisdictional Hazard Mitigation Plan* for more information.

7.1. Mitigation Action Progress

Plan monitoring means tracking the implementation of the plan over time. The plan must identify how, when, and by whom the plan will be monitored.

7.1 Table: **Mitigation Action Progress Report**

	Action Item	Responsible Agency	Reporting Period	Project Status	If completed, how funded	What was accomplished	Obstacles	If uncompleted, explain why	Carryforward to 2023-2028
1	Carlsbad Emergency Management Administrative Team (CEMAT)/Hazard Mitigation Working Group to develop hazard mitigation public awareness strategies	Carlsbad Emergency Services	2018-2023	Completed	Not applicable	Ensured the city's LHMP actions were integrated into city plans and public education and community outreach strategies.	None	Not applicable	Yes
2	Continue with Hosp Grove trimming and replanting efforts.	Carlsbad Parks & Recreation	2018-2023	Completed	Grant Funding and General Fund	Hosted (2) community events to assist with trimming & planning efforts	Staff shortages global pandemic	Not applicable	Yes This is part of the city's Carlsbad Community Forest and Trails plans
3	Continue to maintain the City's weed abatement ordinance to facilitate the removal of annual weeds/vegetation or habitat.	Carlsbad Fire Prevention	2018-2023	Completed for reporting period, but is an ongoing program	General Fund	Reduction in the number of non-compliant property owners Increased coordination with City's Code Enforcement team	None	Not applicable	Yes This is part of the city's Hazard Reduction Program

	Action Item	Responsible Agency	Reporting Period	Project Status	If completed, how funded	What was accomplished	Obstacles	If uncompleted, explain why	Carryforward to 2023-2028
4	Investigate feasibility of maintaining hazardous materials business plans in Mobile Data Computer.	Carlsbad Fire Department	2018-2020	Completed	General Fund	Businesses who store or generate hazardous materials are integrated into the Carlsbad Fire Department's response system application. This feature allows fire operations personnel to view facility hazard material inventory and site maps before arriving on-scene	None	Not appliable	No

	Action Item	Responsible Agency	Reporting Period	Project Status	If completed, how funded	What was accomplished	Obstacles	If uncompleted, explain why	Carryforward to 2023-2028
5	Continue periodic updates of local building codes, public works construction codes, zoning and grading ordinances to reflect legislative changes.	Carlsbad Fire Prevention Carlsbad Community Development Carlsbad Public Works Department Carlsbad City Attorney Office	2018-2023	Completed for reporting period, but is an ongoing effort	General fund	Ensure all city planning, development, permitting, inspections and code enforcement practices reflect current local and state codes Updates made to existing city ordinances to reflect changes to codes	None	Not applicable	Yes
6	Update hazardous material business plan library.	Carlsbad Fire Prevention	2019-2023	Completed for reporting period, but is ongoing effort	Not applicable	Digitize hazardous material plans for easier access by city staff	Global pandemic slowed the progress of the project	Not applicable	Yes

	Action Item	Responsible Agency	Reporting Period	Project Status	If completed, how funded	What was accomplished	Obstacles	If uncompleted, explain why	Carryforward to 2023-2028
7	Provide information to the public on the city website and through public education opportunities.	Carlsbad Emergency Services Carlsbad Fire Prevention	2018-2023	Completed	General fund	Staff provided information	None	Not applicable	Yes
8	Update and adopt Local Coastal Program (LCP) to include assessment of impacts and vulnerabilities associated with sea level rise, such as inundation, flooding, wave impacts and erosion. LCP will identify strategies and adaptation measures to minimize risks.	Carlsbad Community Development Carlsbad Emergency Services	2019-2019	Completed	General fund	Adoption of the Plan by: Carlsbad City Council and California Coastal Commission	None	Not applicable	No
9	Adopt Climate Change Action Plan (CAP), which contains information about the impacts of climate change and a comprehensive strategy to reduce the community's greenhouse gas emissions that are contributing to climate change.	Carlsbad Environmental Sustainability	2015-2023	Initial plan completed Plan update is in progress	General fund and grants	Through implementation of the existing CAP, the city surpassed its 2020 greenhouse reduction targets.	Staff changes Global pandemic slowed the progress of the project	Not applicable	Yes

	Action Item	Responsible Agency	Reporting Period	Project Status	If completed, how funded	What was accomplished	Obstacles	If uncompleted, explain why	Carryforward to 2023-2028
10	Coordinate city IT and Cybersecurity planning with County Cybersecurity Planning Group.	Carlsbad Information Technology Carlsbad Emergency Services	2020-2023	Completed for reporting period, but is an ongoing program	General fund	Enhancing the city's Cybersecurity process and procedures to minimize potential risks	None	Not applicable	Yes

7.2. Plan Update Evaluation

Plan Section	Considerations	Explanation
Planning Process	Should new jurisdictions and/or districts be invited to participate in future updates?	Yes, as new business and/or community sector organizations form during the next project period.
	Have any internal or external agencies been invaluable to the mitigation strategy?	Carlsbad Community Development Department Carlsbad Community Services Carlsbad Communication & Engagement Department Carlsbad Construction Management & Inspection Department Carlsbad Emergency Management Administrative Team (CEMAT) Carlsbad Fire Department Emergency Services Carlsbad Fire Department Fire Prevention Carlsbad Fleet & Facilities Department Carlsbad GIS Department Carlsbad Information Technology Department Carlsbad Parks & Recreation Department Carlsbad Utilities Department California Department of Water Resources Carlsbad Chamber of Commerce Community Emergency Response Team (CERT) Ready Carlsbad Business Alliance US Army Corps of Engineers US Bureau of Reclamation
	Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?	Yes, the continuance of virtual meetings developed during the worldwide pandemic.
	Has the Planning Team undertaken any public outreach activities?	Yes, a variety of outreach activities continue to be developed and implemented and are ongoing.
	How can public participation be improved?	The City of Carlsbad has always had strong public participation and the goal is to keep the community engaged in the planning process.
	Have there been any changes in public support and/or decision-maker priorities related to hazard mitigation?	Yes, the worldwide pandemic saw several conflicting priorities related to public mitigation support.
Capability Assessment	Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?	Yes, updated hazard mitigation plans are part of an ongoing aspect of Carlsbad's mitigation efforts.
	Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?	Potentially, as staff positions change, and budget priorities shift, this capability may see some limitation of available resources.
	Are there different or new education and outreach programs and resources available for mitigation activities?	Carlsbad is always striving to incorporate new outreach programs and resources into its mitigation activities. Increased coordination with Carlsbad Prevention and Preparedness teams on outreach and engagement opportunities.
	Has NFIP participation changed in the participating jurisdictions?	No change noted.

TABLE 12: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 7.2 DATA.

Plan Section	Considerations	Explanation
Risk Assessment	Has a natural and/or technical or human-caused disaster occurred?	Worldwide pandemic.
	Should the list of hazards addressed in the plan be modified?	Hazards modifications have been made.
	Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future updates?	As new sources of GIS products, and technological tools (mobile apps, etc.) emerged, they have been identified and incorporated in the plan.
	Do any new critical facilities or infrastructure need to be added to the asset lists?	Not currently.
	Have any changes in development trends occurred that could create additional risks?	Section 5.3 discusses development since the 2018 Plan and future development for the jurisdiction. With the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in the City's vulnerability to identify priority hazards.
	Are there repetitive losses and/or severe repetitive losses to document?	No.
Mitigation Strategy	Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimate accurate?	Yes.
	Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan?	Already projected to increase by three additional mitigation goals moving into the next project period.
	Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?	Unknown.
	Are there new funding sources to consider?	Unknown.
	Have elements of the plan been incorporated into other planning mechanisms?	Yes, there is a strong connection between mitigation planning and Carlsbad's General Plan.
Plan Maintenance Procedures	Was the plan monitored and evaluated as anticipated?	Yes.
	What are needed improvements to the procedures?	Ensure continued monitoring and evaluation by appropriate city staff members during the next project period.

TABLE 13: FEMA LOCAL MITIGATION PLANNING HANDBOOK WORKSHEET 7.2 DATA CONTINUED

7.3. Implementation through existing programs and other planning mechanisms

Implementation and maintenance of this LHMP Update is critical to the overall success of hazard mitigation planning. This section provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the Plan. The section also discusses incorporating the LHMP Update into existing planning mechanisms and how to address continued public involvement.

7.3.1 Implementation

Once adopted, this LHMP Update faces the truest test of its worth: implementation. While this Plan contains many worthwhile actions, the city will need to decide which action(s) to undertake first. Two factors will help with making that decision: the priority assigned the actions in the planning process and funding availability. Low or no-cost actions most easily demonstrate progress toward successful LHMP implementation.

An important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other plans and mechanisms, such as general plans, stormwater plans, Emergency Operations Plan (EOP), evacuation plans, and other hazard and emergency management planning efforts for the City. City already implements policies and programs to reduce losses to life and property from hazards. This LHMP Update builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. Implementation can be accomplished by adhering to the schedules identified for each action and through constant, pervasive, and energetic efforts to network and highlight the multi-objective, win-win benefits to each program and the Carlsbad community and its stakeholders. This effort is achieved through the routine actions of monitoring agendas, attending meetings, and promoting a safe, sustainable community. Additional mitigation strategies could include consistent and ongoing enforcement of existing policies and vigilant review of programs for coordination and multi-objective opportunities.

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. This could include creating and maintaining a bank of ideas on how to meet local match or participation requirements. When funding does become available, the city will be in a better position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal programs and earmarked funds, benefit assessments, and other state and federal grant programs, including those that can serve or support multi-objective applications.

7.3.2 Responsibility for Implementation of Goals and Activities

The staff appointed to represent each department within the city are charged with implementation of various actions in this LHMP Update. During the annual reviews as described later in this section, an assessment of progress on each of the goals and activities in the LHMP Update should be determined and noted. At that time, recommendations were made to modify timeframes for completion of activities, funding resources, and responsible entities. On an annual basis, the priority standing of various activities may also be changed. Some activities that are found not to be doable may be deleted from the Plan

Update entirely and activities addressing problems unforeseen during Plan development may be added.

7.3.3 Role of Hazard Mitigation Planning Committee (HMPC) in Implementation and Maintenance

With adoption of this LHMP Update, the City's Emergency Services will be responsible for the LHMP implementation and maintenance. The HMPC identified in Section 2 (or a similar committee) will reconvene annually to ensure mitigation strategies are being implemented and the city continues to maintain compliance with the NFIP. As such, the city will continue its relationship with the HMPC, and:

- Act as a forum for hazard mitigation issues
- Disseminate hazard mitigation ideas and activities to all participants
- Pursue the implementation of high-priority, low/no-cost recommended actions
- Ensure hazard mitigation remains a consideration for community decision makers
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the plan's recommended actions for which no current funding exists
- Monitor and assist in the implementation and update of this Plan

7.4 Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate LHMP implementation and to update this Plan as progress, roadblocks, or changing circumstances are recognized.

7.4.1. Maintenance Schedule

- Carlsbad Emergency Services is responsible for initiating Plan reviews. In order to monitor progress and update the mitigation strategies identified in the mitigation action plan, the HMPC will revisit this Plan annually each year and following a hazard event. With this LHMP Update anticipated to be fully approved and adopted in October 2023, the next formal Plan update for the Placer County Planning Area will occur in 2024.

7.4.2. Maintenance Schedule

The City Emergency Services is responsible for initiating Plan reviews. To monitor progress and update the mitigation strategies identified in the mitigation action plan, Emergency Services and the HMPC will revisit this Plan annually each year and following a hazard event.

7.4.3. Maintenance Evaluation Process

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the LHMP. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions
- Increased vulnerability as a result of failed or ineffective mitigation actions
- Increased vulnerability as a result of new development (and/or annexation).
- Increased vulnerability resulting from unforeseen or new circumstances.

Updates to this LHMP will:

- Consider changes in vulnerability due to action implementation
- Document success stories where mitigation efforts have proven effective

- Document areas where mitigation actions were not effective
- Document any new hazards that may arise or were previously overlooked
- Incorporate new data or studies on hazards and risks
- Incorporate new capabilities or changes in capabilities
- Incorporate growth and development-related changes to infrastructure inventories
- Incorporate new action recommendations or changes in action prioritization.

Changes will be made to this LHMP update to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources. All mitigation actions will be reviewed as well during the monitoring and update of this Plan to determine feasibility of future implementation. Updating of this LHMP will be by written changes and submissions, as the HMPC deems appropriate and necessary

7.5 Annual Plan Review Process

For the LHMP Update review process, Placer County OES, as lead along with the County CRS Coordinator, will be responsible for facilitating, coordinating, and scheduling reviews and maintenance of the LHMP. The LHMP is intended to be a living document. The review of the 2021 LHMP Update will normally occur on a quarterly basis each year and will be conducted by the HMPC as follows:

- The Placer County OES will place an advertisement in the local newspaper advising the public of the date, time, and place for each quarterly review of the LHMP Update and will be responsible for leading the meeting to review the Plan.
- Notices will be mailed to the members of the HMPC, federal, state, and local agencies, non-profit groups, local planning agencies, representatives of business interests, neighboring communities, and others advising them of the date, time, and place for the review.
- County/City/District officials will be noticed by email and telephone or personal visit and urged to participate.
- Members of the County's Planning Commission and other appointed commissions and groups will also be noticed by email and either by telephone or personal visit.
- Prior to the review, department heads and others tasked with implementation of the various activities will be queried concerning progress on each activity in their area of responsibility and asked to present a report at the review meeting.
- The local news media will be contacted, and a copy of the current Plan will be available for public comment at Placer County.
- After the review meeting, minutes of the meeting and a quarterly report will be prepared by the HMPC and forwarded to the news media (public) and the ISO/CRS specialist for the CRS program. The report will also be presented to the County Board of Supervisors for review, and a request will be made that the Board take action to recognize and adopt any changes resulting from the review.

7.5.1 Criteria for Annual Reviews

The criteria recommended will be utilized in reviewing and updating the LHMP. More specifically, the reviews should include the following information:

- Community growth or change in the past quarter.
- The number of substantially damaged or substantially improved structures by flood zone.
- The renovations to public infrastructure including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center (EOC) and whether or not the event resulted in a presidential disaster declaration.

- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazard events descriptions.
- Documented damages due to the event.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.
- Review of any changes in federal, state, and local policies to determine the impact of these policies on the community and how and if the policy changes can or should be incorporated into the Hazard Mitigation Plan. Review of the status of implementation of projects (mitigation strategies) including projects completed will be noted. Projects behind schedule will include a reason for delay of implementation.

7.5.2 Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the 2023 LHMP recommendations and their underlying principles into other City plans and mechanisms.

Where possible, Plan participants will use existing plans and/or programs to implement hazard mitigation actions. As previously stated in Section 7.1 of this plan, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. The point is re- emphasized here.

As described in this LHMP's capability assessment, the City already implements policies and programs to reduce losses to life and property from hazards. This Plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- City general and master plans, to include Public Safety and Housing elements
- City Emergency Operations Plans and other emergency management efforts
- City Climate Change Plan
- City ordinances
- Flood/stormwater management/master plans
- Capital improvement plans and budgets
- Other plans and policies outlined in the capability assessment
- Other plans, regulations, and practices with a mitigation focus

HMPC members involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this LHMP with these other plans, programs, etc., as appropriate. As described in Section 7.1 Implementation, incorporation into existing planning mechanisms will be done through the routine actions of:

- Monitor other planning/program agendas
- Attend other planning/program meetings
- Participate in other planning processes

The successful implementation of this mitigation strategy will require constant and vigilant review of existing

plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this hazard mitigation plan.